

Avery Architectural and Fine Arts Library
Department of Drawings & Archives
Columbia University

**Guide to the
Andrew Alpern Collection
of Drawing Instruments, circa 1700-2004**

2006.006

2007.020

- Date Range:** Circa 1700-2004
- Size:** 177 groups of instruments, 12 groups of miscellaneous items, 126 volumes of printed materials, and one folder of archival materials.
- Preferred Citation:** Andrew Alpern Collection of Drawing Instruments, circa 1700-2004.
Department of Drawings & Archives, Avery Architectural and Fine Arts Library, Columbia University.
- Acquisition Information:** This collection was a gift to Avery Library from Andrew Alpern in 2006 and 2007. Unless noted otherwise, the items listed in this inventory belong to the 2006.006 gift.
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Dept. of Drawings & Archives website:
<http://www.columbia.edu/cu/lweb/indiv/avery/da/index.html>

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| Location: | <p>With the exception of the materials in Series XIV, all items are located onsite at the Avery Library.</p> |
| Processing Information: | <p>This collection was processed by Andrew Alpern prior to the collection's arrival at Avery Library.</p> |
| Finding Aid Preparation: | <p>This finding aid is largely based on the comprehensive inventory written by Andrew Alpern. All descriptions, attributions of maker, dates, and statements of biographical information were provided by Mr. Alpern. Additional editing was done by Annemarie van Roessel, Archivist, Avery Architectural and Fine Arts Library, in Spring 2007.</p> |
| Finding Aid Date: | <p>2007-02-19; last revised 2008-04-07</p> |

Historical Note:

The items in this collection were gathered by New York architect, historian, and attorney Andrew Alpern over forty years, primarily by purchase at auction and from private dealers in the United States and Europe.

Scope and Content:

This collection primarily contains 177 groups of English, Continental and American drafting sets and individual instruments dating from circa 1700 to 2004. These instruments were used to create technical drawings, typically by architects, draftsmen, engineers, surveyors, and students. Complementing the instruments are a small group of miscellaneous items, including medals, a model, a necktie, and a charm bracelet, and a large group of published materials, including trade catalogs and other technical, biographical, historical, and scholarly writings about drafting and scientific instruments and related subjects.

For a general overview of the collection and selected digital images, please visit <http://www.columbia.edu/cu/lweb/indiv/avery/da/alpern.html>

Arrangement and Organization:

This collection is divided into thirteen series, according to type, as follows:

- Series I: English Sets in Pocket Étuis
- Series II: English Sets in Magazine Cases
- Series III: 19th-century English Magazine Cases
- Series IV: Continental Sets
- Series V: American Sets
- Series VI: 20th-century Sets
- Series VII: Scales and Rules
- Series VIII: Protractors
- Series IX: Proportional Dividers
- Series X: Specialized Sets and Individual Instruments
- Series XI: Slide Rules and Other Computational Devices
- Series XII: Triangles and French Curves
- Series XIII: Miscellaneous Items
- Series XIV: Books, Journals and Catalogues

Subject Terms:

Keuffel & Esser Co.

Negretti and Zambra

Theo. Alteneder & Sons--Catalogs.

Architectural drawing--Equipment and supplies

Architectural drawing--Equipment and supplies--Catalogs.

Architectural drawing--Equipment and supplies--Handbooks, manuals, etc.

Surveying --Instruments.

Mechanical drawing.

Storage Locations:

C18

Above C62a

C62n

C63

C375

Offsite

Series I: English Sets in Pocket Étuis

1. English, prior to 1715

John Rowley (circa 1668-1728)

Silver, ivory, and wood drawing instruments with decorative engraving, in black leather covered wood etui.

Case:

Of étui form, 13.5cm (5¼") long, 6.5cm (2½") wide at top; wood, covered in pebble-grained black leather worn gold leaf on top of interior lower section, silver(?) hinge with brass pin, secured with steel screws (one filed down, one lacking and replaced with epoxy glue).

Contents:

Ivory rectangular protractor 11.4cm (4½") x 4.2cm (1⅝") with seven various scales on front and with reverse blank.

Wood scale with hand-inlaid applied-paper sides, set into carved wood handle 11.1cm (4⅜") x 2.5cm (1")

Six instruments in silver, with steel points, one thin layer of brass sheet in the moving joints of the dividers and compasses, all instruments but one engraved with flower and leaf decoration: dividers, 10.5cm (4⅛") long
compasses, with decorative steel wing set screw and removable steel divider leg and with hinged ink leg and hinged pencil leg
ruling pen, with steel blades and decorative steel wing adjustment screw, waisted, with double-tapering octagonal handle, and ball end unscrewing to reveal short pin-pricker
combination pen/pencil holder with hidden reversible ends, one with gold(?) pen point; apparently made from a flat sheet of silver rolled around a mandrel and soldered, with simple banding but lacking the engraved decoration and owner's name or initials and thus may be an early replacement.

Signatures:

I:Rowley:fecit · stamped on ivory scale; early (original?) owner's name or initials engraved on four instruments, *T·Wood*, *Wood*, *T·W*.

2. English, third quarter 18th-century

Benjamin Martin (1705-1782)

Brass, ivory, and ebony drawing instruments in sharkskin-covered wood étui, owned from 1784 by Admiral Sir Charles Cotton (1753-1812).

Case:

Of étui form, 17.5cm (6⁷/₈") long, 8cm (3¹/₈") wide at top; wood, covered in black sharkskin, interior paper-lined, with worn rose-red velvet inside lid; hinge secured with nails and decorative washers.

Contents:

Ivory rectangular protractor 15.2cm (6") × 4.2cm (1⁵/₈") with double diagonal-divided scale on front and 14 scales on back including trigonometric and Gunter scales, moderately worn.

Ivory navigation sector with brass joint, alignment pins, and insets at the ends of the scales.

Ebony three-arm parallel rule with shaped brass linkages and buttons.

Eight instruments in brass with steel points, hinge leaves, and decorative wing adjustment screws:

- dividers, 13.5cm (5³/₈") long
- compasses, with removable steel divider leg and with hinged pencil leg, hinged ink leg and hinged dotting-wheel ink leg
- small ink compass with finial-shaped handle
- ruling pen, with brass blades with steel points, decoratively baluster-turned handle unscrewing at mid-point to reveal a pin-pricker
- short pencil holder with flattened-end ink eraser

[Lacking thin file/adjustment tool]

Signatures:

* *B·Martin* * *LONDON* * stamped on scale; * *Martin* * / * *London* * stamped on sector; hand-written in ink inside lid *Capt Cotton 1784*.

3. English, fourth quarter 18th-century

George Adams, Jr. (1750-1795)

Brass, ivory, and ebony instruments in green shagreen-covered wood étui with silver mountings.

Case:

Of étui form, 17.7cm (7") long, 8cm (3 $\frac{1}{8}$ ") wide at top; wood, covered in green shagreen, with ribbed silver band and vacant silver engraving plate to the top and silver hinge set with silver pins and decorative washers.

Contents:

Ivory rectangular protractor 15.1cm (6") x 4.1cm (1 $\frac{5}{8}$ ") with seven scales on back, one of which is double-diagonal-divided.

Ivory navigational sector with brass arch joint, alignment pins, and insets at the ends of the scales.

Ebony 3-arm parallel rule with shaped brass linkages and buttons; one linkage broken, and another apparently an early replacement.

Eight instruments in brass with steel points and double hinge leaves:

dividers

compasses, 15.4cm (6") long, with decorative steel wing set screw and removable steel divider leg, and with hinged ink leg with decorative brass wing adjustment screw, and hinged pencil leg

small ink compass with finial-shaped handle (lacking adjustment screw)

ruling pen, with brass blades (one hinged) inset with steel points, decoratively baluster-turned handle unscrewing at midpoint to reveal a pin-pricker

brass pencil end and ink eraser with decorative turning and reeding

steel adjustment tool (one spanner tip broken)

Signature:

*G * Adams. N^o 60. Fleet Street. London.* stamped in a Roman font on scale; *Adams London* engraved in script on sector

4. English, late 18th-century

Peter Dollond (1730-1821)

Set of silver and ivory drawing instruments in a shagreen-covered silver étui.

Case:

Of étui form, 17cm (6¾") long, 7cm (2¾") wide at top; silver covered in green shagreen but with bottom and domed top uncovered and showing the silver, with decorative silver bandings and silver hinge and decorative push-button, and with fitted wood insert in bottom topped by a cut-out silver protective plate.

Contents:

Ivory rectangular protractor 15.2cm (6") × 4.2cm (1⅝") with double-diagonal-divided scale on front and 16 scales on the back

Ivory sector with silver arch joint, alignment pins, and insets at the ends of the scales.

Ivory three-arm parallel rule with shaped and cut-out silver linkages.

Eight instruments in silver with steel points, double hinge-leaves, and decorative wing adjustment screws:

- hairspring divider

- compasses 15.7cm (6⅛") long, with one fixed and one removable divider leg

- hinged pencil leg

- hinged ink leg with hinged blade

- small ink compasses with hinged blade and finial-shaped handle

- ruling pen with hinged blade, turned shaped handle unscrewing in middle to a long pin-pricker

- small pencil holder with flattened-end ink eraser

- steel tool with knife, file, screw-driver, and spanner to adjust the divider/compass joints

Signature:

DOLLOND LONDON stamped on scale and engraved on joint of sector

5. English, second half 18th-century

Samuel Whitford [?]

Set of silver and ivory drawing instruments in a silver-mounted étui, covered in green shagreen with the three large tubercles of the original ray skin sanded down and positioned vertically on the edge of the lid just above the catch.

Case:

Of étui form, 12.7cm (5") long, 5.3cm (2 $\frac{1}{8}$ ") wide at top; wood, with silver top and bottom, silver banding, and green shagreen covering; fitted wood interior, with a cut-out silver cover plate.

Contents:

Ivory rectangular protractor 11.5cm (4 $\frac{1}{2}$ ") x 3.5cm (1 $\frac{3}{8}$ ") with a double-diagonal-divided scale on the front and 14 scales on the back.

Six instruments in silver with steel points, double hinge leaves, and decorative wing adjustment screws:

- compasses with one fixed and one removable divider leg
- hinged ink leg with hinged blade
- hinged pencil leg with sliding ring retainer
- connector leg. The three legs can be used together to form a double-ended ruling pen and pencil
- small ink compasses with hinged blade and finial-shaped handle
- small pencil holder with flattened-end ink eraser

Signature:

WHIFORD *LONDON stamped on the scale.

6. English, fourth quarter 18th-century to first quarter 19th-century

John & Edward Troughton

Set of ivory and brass drawing instruments in wood étui covered in a green shagreen.

Case:

Of étui form, 14cm (5½") long, 4.5cm (1¾") wide at the top; wood, covered with green shagreen, with replaced catch button.

Contents:

Ivory scale, 11.3cm (4½") long 1.8cm (5⁄8"), with four architect's scales and a scale of chords on the front and a double-diagonal-divided scale on the back.

Four instruments in brass with brass decorative wing adjustment screws and with steel points and double hinge leaves:

compasses 11.4cm (4½") long, with one fixed and one removable divider leg

hinged ink leg with hinged blade

hinged pencil leg with ring retainer

ruling pen with hinged blade, baluster-turned handle unscrewing to reveal a pin-pricker

Signature:

Troughton · London stamped on the ivory scale

7. English, third quarter 18th-century

Edward Nairne (1726-1806)

Set of silver drawing instruments with a silver protractor/scale in a silver-bound étui covered in tortoise shell.

Case:

Of étui form, 13cm (5 $\frac{1}{8}$ ") long, 5.5cm (2 $\frac{1}{8}$ ") wide at the top; wood, covered in tortoise shell, with decorative silver banding, silver bottom, and a domed silver top engraved with a decorative monogram WM; the fitted wood interior covered with a cut-out silver protective plate.

Contents:

Silver rectangular protractor/scale 10.7cm (4 $\frac{1}{4}$ ") x 4.1cm (1 $\frac{5}{8}$ "), engraved on the front with the protractor and on the back with a double-diagonal-divided scale on the upper half, separated by a decorative line of engraving from six scales engineer's scales on the lower half.

Seven instruments in silver with steel points, double hinge leaves, and decorative wing adjustment screws:

- compasses 11.3cm (4 $\frac{3}{8}$ ") long, with one fixed and one removable divider leg
- hinged ink leg with hinged blade
- hinged pencil leg with sliding ring retainer
- connector leg. The three legs can be used together to form a double-ended ruling pen and pencil
- small ink compasses with hinged blade and finial-shaped handle
- ruling pen with hinged blade, baluster-turned handle, unscrewing to reveal a pin-pricker
- small pencil holder with flattened-end ink eraser

Signature:

E Nairne London engraved in a flourished script on the protractor/scale

8. English, first decade 19th-century

William Harris (w. 1799-1841)

Brass and ivory drawing instruments in a small mahogany etui.

Case:

Of étui form, 13cm (5 $\frac{1}{8}$ ") long, 6.8cm (2 $\frac{3}{4}$ ") wide at top; mahogany with brass banding and vacant brass engraving plate on top, brass hinge secured with brass pins, catch faulty, top lined in red leather.

Contents:

Ivory rectangular protractor 11.4cm (4 $\frac{1}{2}$ ") x 3.4cm (1 $\frac{1}{4}$ ") with five scales (including a scale of chords) on front and seven scales on back, one of which is double-diagonal-divided.

Ivory calculating sector with nickel silver joint, alignment pin, and inserts at the ends of the scales.

Ivory parallel rule with brass linkages and buttons.

Eight instruments in brass with steel points and double hinge leaves:

dividers

compasses, 11.4cm (4 $\frac{1}{2}$ ") long with removable divider leg and with hinged pencil leg,

hinged ink leg with decorative brass wing adjustment screw, and hinged dotting ink leg

small ink compass with finial-shaped handle and decorative brass wing adjustment screw

ruling pen, with brass blades (one hinged) inset with steel points, decoratively baluster-

turned handle unscrewing at midpoint to reveal a pin-pricker

brass pencil end/eraser with decorative turning

[lacking: a small steel adjustment tool]

Signature:

*HARRIS * 47 HIGH HOLBORN LONDON* stamped on scale

9. English, fourth quarter 18th-century

William Fraser (circa 1720-1812)

Incomplete set of brass and ivory drawing instruments in a sharkskin-covered wood pocket etui.

Case:

17cm (6³/₄") long, 7.2cm (2⁷/₈") wide at the top; hinge-top pocket wood étui covered in black sharkskin, the interior of the lid lined in yellowed paper marked in ink in an early hand "2-15-0" and a piece of green velvet, the bottom interior a single piece of wood cut out for the instruments.

Contents:

6" brass ruling pen with hinged blade, steel blade tips (lacks adjustment screw), and with decoratively turned handle unscrewing in the middle to reveal a pin-pricker.

3" ink compass with double-leaf steel joint, hinged blade with hand-cut brass wing adjustment screw, finial-turned handle.

Steel divider leg and jointed brass ink leg with hinged blade and hand-cut brass wing adjustment screw, both for lacking large compasses.

9" one-fold ivory ruler numbered in inches and divided to eighths.

6¹/₄" ivory sector with round brass joint, the customary scales, two brass alignment pins, brass inserts at the ends of the scales, and marked * * *.

6" x 1⁵/₈" ivory protractor numbered in both directions and divided to whole degrees and with a scale of inches on the front diagonal-divided to half inches and quarter inches, and on the back six engineers scales, plus ten separate scales for chords (twice), rhumbs, longitude, latitude, sines, secants, tangents, and two others marked lea and hqu.

6" ivory parallel rule with decoratively shaped brass linkages and buttons, the opposite edges beveled

[lacking: large compasses, pencil leg for same, knife/adjustment tool, and possibly a small divider]

Signature:

FRASER LONDON on sector and protractor

10. English, first quarter 19th-century

No attribution

Set of brass and ivory drawing instruments in a sharkskin-covered wood pocket etui.

Case:

18cm (7") long, 7.5cm (3") wide at the top; hinge-top pocket wood étui covered in black sharkskin with vacant rectangular brass engraving plate to the top, the interior of the lid lined in yellow paper with old ink figures, the bottom interior a cut-out piece of wood with added pasteboard dividers made from reused old printed papers; the hinge lacking one fixing pin.

Contents:

6" brass compasses with one fixed and one removable steel divider leg, knurled round fixing screw for the leg, double-leaf steel joint with ordinary screw adjustment.

Hinged fixed-blade ink leg with knurled adjustment screw as above, hinged dotting wheel ink leg and hinged pencil leg with sliding retaining ring, all for above.

5⅞" brass divider with steel legs, matching the compasses.

5½" brass ruling pen with fixed steel blades, knurled adjustment knob as above, and with decoratively turned handle unscrewing in the middle to reveal a pin-pricker.

6¼" ivory sector with round brass joint, the customary scales, two brass alignment pins, brass inserts at the ends of the scales, and marked * * * plus * pcl *.

6" x 1⅝" yellowed and worn ivory scale with decoratively shaped template end, with seven engineers' scales and a scale of chords on the front, and two scales and a double-diagonal-divided scale on the verso.

[Lacking: a small pencil with brass ink-eraser end]

11. English, first or second quarter 18th-century

No attribution

Set of brass and ivory drawing instruments in a sharkskin-covered wood pocket étui.

Case:

17.2cm (6¾") long, 7.3cm (2⅞") wide at top; hinge-top pocket wood étui covered in black sharkskin, the interior of the top lined in paper, the bottom interior built up of pieces of wood with pasteboard dividers.

Contents:

5⅝" brass compasses with one fixed and one removable steel divider leg, hand cut steel wing fixing screw for the leg, double-leaf brass joint with ordinary screw adjustment.

Hinged dotting wheel ink leg, hinged pencil leg with sliding retaining ring, hinged fixed-blade ink leg with knurled adjustment screw, all for above.

5" brass divider with steel legs (one tip broken), matching the compasses.

5¼" brass ruling pen with fixed steel blades, knurled adjustment screw as above, with decoratively turned handle.

Brass end for pencil [lacking] with flattened oval end serving as an ink eraser.

6" ebony parallel rule with decoratively shaped brass linkages and buttons.

3½" brass semi-circular protractor numbered (punched) in both directions and divided to whole degrees.

6" x 1⅝" ivory scale with decoratively shaped template end, with seven engineers' scales and a scale of chords on the front, and two scales and a double-diagonal-divided scale on the back (but for its lesser usage and a minor detail, this scale is identical to the one in Item 10 of this collection).

Signatures:

Paper trade label glued inside the top: *McAllister & Co., 48, Chestnut Street, Philadelphia, Have constantly for sale, Cases of Mathematical Instruments For Schools, Wholesale & Retail. Also – Dividers, Gunter's Scales, Parallel Rules, Brass and Ivory Protractors, etc. separate from the Cases.*

Also an inked owner's signature: *A.I.Kappella of Philad^a* November 14, 1858

12. English, first quarter 19th-century

Robert Brettell Bate (1782-1847)

Incomplete set of brass and ivory drawing instruments in a silver-mounted shagreen-covered wood etui.

Case:

17.2cm (6³/₄") long, 6.8cm (2⁵/₈") wide at the top; hinge-top pocket wood étui covered in green shagreen, trimmed in silver with silver hinge, and with a vacant rectangular silver engraving plate to the top, the interior of the top lined in paper and a piece of worn red velvet, the bottom interior a single piece of wood cut out for the instruments.

Contents:

6¹/₄" brass compasses with double-leaf steel joint and with one fixed and one splined friction-fit removable steel divider leg.

Jointed ink leg steel points and with one fixed and one hinged blade and knurled knob for adjustment screw, 5" extension leg, both for above (pencil leg lacking).

5¹/₄" brass hairspring divider matching the compasses (adjustment screw lacking).

2⁷/₈" brass ink compass with hinged blade, knurled adjustment knob as above and baluster-finish handle.

5³/₄" brass ruling pen with one fixed and one hinged blade with steel points and knurled adjustment knob as above, and with decoratively turned handle unscrewing in the middle to reveal a pin-pricker.

6" x 1⁵/₈" ivory protractor, numbered in both directions and divided to whole degrees, with four architectural scales on the front, and on the back six engineers' scales, a scale of chords, and an inch scale with the end half- and quarter-inches diagonal-divided.

[Lacking: compass pencil leg, a small pencil with brass ink-eraser end, and an adjustment tool/knife.]

Signature:

BATE LONDON stamped on the ivory scale; a printed trade label (losses) glued inside the lid: *R. B. Bate Mathematical Instrument Make[er] Wholesale, Retail & for Export at № 17, Poultry, L[ondon].*

13. English, circa 1800

No attribution

Set of brass and ivory drawing instruments in a silver-mounted shagreen-covered wood étui.

Case:

17.5cm (6⁷/₈") long, 8cm (3¹/₈") wide at the top; hinge-top pocket wood étui covered in green shagreen, trimmed in silver with silver hinge, and with a vacant rectangular silver engraving plate to the top, the interior of the top with a piece of plum-colored velvet affixed and an (?) inventory number 11872 ECN inked onto the wood, the bottom interior a single piece of wood cut out for the instruments.

Contents:

6¹/₈" brass compasses with double-leaf steel joint and with one fixed and one removable steel divider leg retained with a hand-cut steel wing fixing screw.

Jointed pencil leg with sliding retaining ring, and jointed ink leg with one fixed and one hinged blade with steel points and hand-cut brass adjustment screw, both for the above.

5" brass divider with steel points, matching the compasses.

3³/₈" brass ink compass with one fixed and one hinged blade with steel points and hand-cut brass wing adjustment screw (one end defective), single-leaf steel joint, and baluster-finial handle.

6¹/₈" brass ruling pen with one fixed and one hinged blade with steel points and hand-cut brass wing adjustment screw, and with decoratively turned handle.

6" ebony parallel rule, with decoratively shaped brass linkages and buttons.

6¹/₄" ivory sector with round brass joint, the customary scales, two brass alignment pins, brass inserts at the ends of the scales, and marked * * *.

6" x 1⁵/₈" ivory protractor, numbered in both directions and divided to whole degrees, with eight architectural scales, a scale of chords, and a scale of inches divided in tenths on the front, and on the back six engineers' scales and an inch scale with the end half- and quarter-inches diagonal-divided.

[lacking: a small pencil with brass ink-eraser end, and an adjustment tool/knife.]

Note:

The color of the ivory of the scale appears newer than that of the sector; it may be a replacement.

14. English, circa 1855[?]

Elliott [Probably William Elliott & Sons]

Brass and ivory drawing instruments in silver-mounted tortoise-shell covered wood étui.

Case:

Of étui form, 17cm (6¾") long, 7.5cm (3") wide at top; wood covered in sheets of tortoise-shell secured with silver nails; with silver hinge secured with silver nails; silver bandings and a vacant rectangular silver engraving plate to the top; the interior compartmentalized solid wood with cut-out silver protective top plate.

Contents:

Ivory rectangular protector 15.2cm (6") x 4.2cm (1⅝") with eight architects' scales and a scale of chords on the front and six engineers' scales plus a double-diagonal-divided scale on the back, with small old chipped corner

Ivory sector with brass arch joint, alignment pins, and insets at the ends of the scales

Ivory 3-arm parallel rule with shaped and cut-out brass linkages

Six instruments in brass with steel points and double hinge-leaves:

divider, 12.2cm (4¾") long

hairspring divider with cut-steel wing adjustment screw

steel divider leg and hinged pencil leg for a compass not present

ruling pen with fixed blades and cut-brass wing adjustment screw but no hidden pin-pricker

short pencil holder with flattened-end ink eraser and thin early (original?) pencil

Signature:

ELLIOTT . 56 STRAND LONDON stamped on scale

Series II: English Sets in Magazine Cases

15. English, fourth quarter 18th-century

Watkins (Jeremiah, d.1810, and Walter, d.1798; w.1784-1798)

Silver and ivory drawing instruments in silver-bound rosewood case.

Case:

18.5cm (7³/₈") wide, 11.8cm (4⁵/₈") deep, 3.8cm (1¹/₂") thick; coarse-grain rosewood; silver corners and bandings set with steel screws; top centered with large domed elliptical silver plate, engraved *R·H·A·Bennet R·N* in Old English lettering with multiple flourishes; bottom inset with rough green velvet; interior with red-velvet-lined-and-wrapped fitted tray over triple mahogany-divided compartments also lined in red velvet, with recessed compartment ends for ease of instrument removal, lid lined in padded red velvet; elliptical ivory or bone escutcheon to keyhole, original lock and key.

Contents:

Ivory rectangular protractor 15.2cm (6") x 4cm (1¹/₂") with scale of chords on front and seven scales on back, one double-diagonal-divided

Ivory navigational sector with silver arch joint, alignment pins, and insets at the ends of the scales

Ivory parallel rule 15.2cm with shaped silver linkages and buttons

Ivory scale of chords with finial-shaped ends

Ivory template cut with four circular curves of varying radii

Eight instruments in silver with steel points and hinge leaves, plus two additional items:

 hairspring dividers

 compasses, 16cm (6¹/₄") long, with removable steel divider leg and with hinged pencil leg, hinged ink leg, and extension leg

 small ink compass with finial-shaped handle

 small pencil compass with smaller finial-shaped handle

 ruling pen with hinged blade, turned ivory or bone handle with button end

 wood pencil with short ivory or bone handle matching ruling pen handle

 short steel sharpening blade set laterally into ivory handle

Signature:

*WATKINS * CHARING CROSS LONDON* stamped on ivory scale; *Watkins Charing Crofs London.* engraved in script on sector joint.

16. English, circa 1810

Matthew Berge (w. 1800 d. 1819)

Set of silver and ivory drawing instruments in mahogany and ebony case.

Case:

14.5cm (5¾") wide, 8.8cm (3½") deep, 3.4cm (1⅜") high; mahogany, with flame mahogany veneer and ebony stringing to the edges, red leather recessed into underside, steel or white-metal keyhole escutcheon (original key present); fully lined in green velvet, with fitted tray fully covered in green velvet and with replaced green-fabric lifting tabs.

Contents:

Ivory combination protractor/scale/rolling rule 11.4cm (4⅜") x 4.1cm (1⅝"); front with protractor, roller wheels, and scale of inches, halves, and quarters, with diagonal divisions reading to 0.0025 inches; back with 16 scales including logarithmic and trigonometric scales

Ivory trigonometric calculation sector with silver arch joint and silver alignment pins and insets at the ends of the scales

Eight instruments in silver with steel points, double hinge leaves, and decorative wing adjustment screws:

hairspring dividers

compasses 11.9cm (4¾") long, with splined, shaped, friction-fit removable divider leg, and with hinged ink leg, hinged pencil leg, and extension leg

small ink compass with finial-shaped handle

ruling pen, with decorative banding and finial end, and with hinged blade, unscrewing at midpoint (brass male threads, silver female ones) to reveal a pin-pricker

pencil holder with similar decorative shaping, well-fitted with apparently early pencil

Signature:

Berge London hand-engraved in script on the arch joint of the sector.

17. English or French, circa 1810

No attribution

Brass and ivory instruments in mahogany wallet case, with bronze protractor/scale, probably made for use in Russia.

Case:

13.9cm (5½") wide, 8.8cm (3½") deep, 1.5cm (⅝") thick; mahogany wallet-style case with well-rounded corners and edges, two small brass hook catches, rectangular brass escutcheon inset into top engraved *GEORGE FERGUSON 1810*; lid lined in purple grosgrain silk (worn) opening to purple-paper lined compartment (for protractor/scale); bottom fitted and lined in purple velvet.

Contents:

Bronze (or perhaps red brass) rectangular protractor/rule 11.8cm (4⅝") x 4.5cm (1¾") with three broad-beveled edges and a shaped and short-beveled bottom edge; front with scale divided in French inches and halves, with diagonal divisions reading to 0.01 inches; the back hand-engraved with four comparison scales identified in an elegant, hand-engraved Russian script as English inches, very long Russian inches, French inches, and French metric centimeters.

Seven instruments in brass and ivory with single-leaf brass hinges, steel points, and steel pivot screws:

divider

compasses 11.5cm (4½") long, with hinged changeable needle-point divider leg and

removable divider leg, and with pencil leg and extension leg [lacking ink leg]

small compasses with handle and with fixed changeable needle-point divider leg and

removable divider leg and with pencil leg [lacking ink leg]

ivory-handled ruling pen with steel blades, brass ferrule, and ball end

[Lacking small adjustment tool.]

18. English, second quarter 19th-century

Charles Wastell Dixey (1798-1880)

Silver and ivory drawing instruments in rosewood case.

Case:

19.5cm (7¾") wide, 11.2cm (4¼") deep, 4.4cm (1¾") high; wood, veneered in rosewood with plated metal corners and bandings; vacant shaped metal engraving plate to top, similarly shaped lock keyhole escutcheon, green felt on bottom; fully lined in dark blue velvet, the top with decorative tufts, a fitted rosewood-stained mahogany tray similarly lined, lifting out to reveal divided and velvet-lined fitted compartments for the scale, sector, and parallel rule; silver hinges, stamped *PM&CO*.

Contents:

Ivory rectangular protractor 15.2cm (6") x 4.9cm (1¾") with five scales on front plus eight scales on back, one of which is double-diagonal divided in inches, halves, and quarters, reading to 0.0025 inches

Ivory navigational sector silver joint, alignment pins, and insets at the ends of the scales

Ivory parallel rule with shaped silver linkages and buttons

Nine instruments in silver with steel points and knurled silver adjustment screws:

hairspring divider with sector joint

compasses 15.3cm (6") long with one fixed and one splined friction-fit removable divider leg, and with hinged pencil leg, hinged ink leg, and extension leg

small ink compass with double steel-leaf joint and finial-shaped handle

silver ruling pen with hinged blade, decoratively turned handle, unscrewing to reveal a pin-pricker

ivory-handled silver ruling pen with hinged blade and decorative turned finial end of handle

steel tool with knife, file, screw-driver, and spanner

Signature:

C. W. DIXEY, MATH^L INST^T MAKER TO HER MAJESTY NEW BOND ST LONDON stamped on sector and parallel rule; also the letter *S* stamped inside the large compass and dividers

19. English, second quarter 19th-century

William Elliott (w. 1804-1849)

Nickel-silver and ivory drawing instruments in small leather-covered case

Case:

13.3cm (5¼") x 8.8cm (3½") x 2.3cm (7⁄8"); wood covered all sides in diamond-patterned maroon leather centering a small rectangular silver plate with owner's name *R C Lindley* engraved in script; the inside of the top lined in padded red silk lifting up to reveal a silk-lined compartment containing the scales; the bottom fitted and lined in red silk velvet; press catch plus two decoratively-cut swing hook closures.

Contents:

Ivory rectangular protractor 11.3cm (4½") x 3.7cm (1½") with eight architects' scales and a scale of chords on the front and six engineers' scales, a scale of chords, and a double-diagonal-divided scale on the back

Ivory double-beveled engineers' offset scale 5cm (2") long, divided on both edges to 60 parts per inch

Eight instruments in nickel silver and ivory with steel double hinge leaves:

divider

compasses, 11.9cm (4⅝") long, with one fixed and one friction-fit removable divider leg hinged ink leg and extension leg [lacking the pencil leg]

pair of small pencil and ink hinged-leg compasses with decorative finial-shaped handles

fixed-blade ruling pen with ivory handle with elegantly finial-turned end

steel combination tool with knife, file, screw driver, and adjustment spanner

early pencil, possibly replacing a lost ruling pen.

Signature:

W. ELLIOTT 268 HIGH HOLBORN LONDON on protractor and W. ELLIOTT LONDON on small scale.

20. English, mid 19th-century

Holtzapffel & Co.

Set of nickel-silver and ivory drawing instruments in a tooled leather-covered case.

Case:

13.5cm (5 $\frac{3}{8}$ ") x 8.4cm (3 $\frac{1}{4}$ "); wood covered in maroon leather, top with decorative tooling, the center set with a small silver plate with the owner's name and place *A.G. Fidler, Tottenham*. engraved in script; the inside of the top lined in decorated red silk, opening to reveal a silk and leather lined compartment; the bottom fitted and lined in red silk velvet, press catch, replaced leather hinge.

Contents:

Ivory protractor 11.4 cm (4 $\frac{1}{2}$ ") x 3.6cm (1 $\frac{1}{2}$ ") with four architects' scales on the front and six engineers' scales plus a double-diagonal-divided scale on the back

Ivory parallel rule with decoratively shaped brass linkages

Ten instruments in nickel silver with steel points and double hinge leaves:

- compasses, 12 cm (4 $\frac{5}{8}$ ") long, with one fixed and one friction-fit removable leg

- hinged ink leg with hinged blade

- hinged pencil leg

- extension leg

- pair of small pencil and ink hinged-leg compasses with decorative finial-shaped handles

- ruling pen with hinged blade and decoratively turned handle unscrewing to reveal a pin-pricker

- fitting for a pencil, with flattened-blade ink eraser at the end

- steel combination tool with knife, file, screw driver, and adjustment spanner

Signature:

* HOLTZAPFFEL & C^O 64 CHARING CROSS * on scale.

21. English, fourth quarter 19th-century

William Ford Stanley (1829-1909)

Set of nickel silver and ivory drawing instruments in a leather-covered pocket case

Case:

16.5cm (6½") x 11cm (4¼"), round-cornered wood covered in diamond-scored black leather, centered with a white-metal plate machine-engraved M.M.L.L-V. NOV. 12TH 1893; top lined in blue watered silk, opening to reveal a compartment similarly lined, divided and with a swiveling metal retaining bar for the scale and parallel rule; the bottom fitted and lined in dark blue silk velvet; push catch, piano hinge.

Contents:

Ivory protractor 12.8cm (5") x 3.8cm (1½"), with eight architects' scales and a scale of chords on the front and five engineers' scales and a double diagonal-divided scale on the back

Ivory parallel rule with decoratively shaped nickel silver linkages and buttons

Eleven instruments in nickel silver and ivory with steel points and double hinge leaves:

- hairspring divider

- compasses 12.8cm (5") long, with hinged legs, one fixed and one friction-fit removable, both set with replaceable needle points

- hinged ink and pencil legs, and extension leg

- pair of small double hinged-leg ink and pencil compasses with triple knurled-knop handles

- three ivory-handled instruments with elegantly turned finial ends

- fixed-blade ruling pen

- hinged blade ruling pen with square ivory grip at base of handle

- needle-point pricker, handle unscrewing near top to reveal compartment for replacement needles

22. English, fourth quarter 19th-century

William Ford Stanley (1829-1909)

Set of nickel silver and ivory drawing instruments in a leather-covered large pocket case.

Case:

14.7cm (5¾") x 20.5cm (8"); round-cornered wood covered in diamond-scored black leather, centered with a vacant rectangular silver engraving plate, top lined in padded maroon watered silk, opening to reveal a compartment similarly lined, divided and with a swiveling metal retaining bar for the scales; the bottom fitted and lined in dark blue silk velvet; two sliding bolt catches, piano hinge.

Contents:

Ivory protractor 15.2cm (6") x 4.3cm (1⅝"), with eight architects' scales and a scale of chords on the front, and six engineers' scales, a scale of chords, and a double diagonal-divided scale on the back

Ivory-colored plastic rectangular protractor 15.2cm (6") x 5cm (2"), marked "PROTRACTORS, RECTANGULAR, 6 INCH, IVORINE 'A' MK. IV." with rectangular cut-out to center, and with architects' and engineers' scales in yards, miles, and metres, six scales to front and six scales to back.

16 instruments in nickel silver and ivory with steel points:

- hairspring divider

- compasses 16.4cm (6⅜") long, with hinged legs, one fixed and one friction-fit removable, both set with replaceable needle points

- hinged ink and pencil legs

- short and long extension legs

- pair of 4-inch double hinged-leg ink and pencil compasses with triple knurled-knop handles
- ink, pencil, and divider side-wheel spring bows, with knurled handles, the divider bow a newer replacement

- three ivory-handled instruments with elegantly turned finial ends

- fixed-blade ruling pen

- hinged blade ruling pen with square ivory grip at base of handle

- needle-point pricker, handle unscrewing near top to reveal compartment for replacement needles

- steel combination tool with knife, file, screw driver, and adjustment spanner

- ball-handled hollow-tube accessory of unknown use

Signature:

STANLEY GREAT TURNSTILE LODON W.C. gold-stamped within a ribbon design with flourishes on the silk lining of the lid; STANLEY LONDON and STANLEY on the ivory handles; STANLEY on the instruments

Series III: 19th-century English Magazine Cases

23. English, third quarter 19th-century

Elliott Brothers

Set of architect's instruments in multi-tiered mahogany case.

Case:

58cm (23") long, 22.3cm (8¾") deep, 18.5cm (7¼") high; mahogany, constructed of half-inch thick planks, hand-dovetailed, small brass screws securing the top, decorative rectangular nickel silver engraving plate set into top, similarly shaped nickel silver keyhole escutcheon and two brass swing catches to the front, the lock signed *HOBBS & CO LONDON, LEVER, MACHINE MADE*; the inside of the top lined in padded dark purple velvet, swinging open (swiveling brass catches secure it) to reveal a velvet-lined and fitted provision for a 7" diameter circular protractor [now lacking] plus space for triangles, French curves, and a straight-edge; a velvet-lined master tray containing a wood tray fitted with mahogany dividers for 12 watercolor cakes (all present, some well used, most molded with a crown and Prince-of-Wales feathers to the front and the color name and *NEWMAN'S SOHO SQUARE* to the back), which lifts out on tape pulls to reveal a velvet-lined compartment below for accessories, now containing an unused thick hexagonal stick of Chinese ink (stamped in blue and gold with various Chinese characters), two lettering or drawing pens (one marked *THACKER LONDON*, the other marked *C.BRANDAUER & CO'S ORIENTAL PEN BIRMINGHAM*); the master tray also containing two velvet-lined wells, one holding six engineers' scales, the other holding eight architects' scales, the scales accessible by lifting on a tape which raises a velvet-lined wood strip under the scales; the master tray also containing a velvet-lined tray, the left side fitted for instruments, the right open for loose accessories, which lifts on tape pulls to reveal velvet-bottomed compartments below, fitted for offset scales, two rolling parallel rules, and accessories; the master tray lifting on fixed rectangular brass wire pulls to reveal four mahogany-divided compartments for railroad curves.

Contents:

Instruments in nickel silver, steel, and ivory:

- 4¼" dividers

- 5" hairspring dividers

- 6" compasses with one fixed and one removable hinged divider leg

- pencil leg, ink leg, and ink dotting leg for above compasses, all hinged

- small elegantly turned screw-top ivory container with four dotting wheels for above

- 2", 3", and 4½" extension legs for above compasses

- ¾" pencil compass with handle

- ¾" ink compass with handle, plus near-duplicate loose in tray

3¼" ink side-wheel spring bow compass, loose in tray
2½" pencil side-wheel spring bow compass
2½" ink side-wheel spring bow compass
2½" side-wheel spring bow divider
6½" proportional dividers with scales marked for Lines, Circles, Plans, and Solids
beam compass fittings with divider-point and pencil legs [lacking ink leg]
21" x 1¾" pearwood straight-edge with one edge beveled (can also serve as a beam for the beam compass)
ivory-handled opisometer (for measuring the length of an irregular line)
ivory-handled pin-pricker, the upper part of the handle unscrewing to reveal a place for spare needles
two ivory-handled ruling pens with hinged blades
unsigned ivory-handled ruling pen with hinged blade
ivory-handled ruling pen with fixed blades and square grip
ivory-handled ruling pen with fixed blades, signed *HUSBANDS * BRISTOL*
ivory-handled knife with teardrop-shaped handle, the end serving as a tracing point, the blade signed *WEISS LONDON*
two spanner/screw driver adjustment tools
circular horn center in nickel-silver frame with three small sharp positioning points
five circular horn centers, each with three small sharp positioning points
two homemade pearwood curved-bracket templates
eight 12" boxwood architects' scales
six 12" boxwood engineers' scales
six 2" boxwood engineers' offset scales
6" rolling parallel rule, ebony with beveled ivory edges engraved with inch scales, the knurled brass rollers with adjoining ivory rollers engraved with numbered scales (ebony has open shrinkage crack)
18" rolling parallel rule, boxwood with beveled edges engraved with inch scales and four architects' scales
four black hard rubber triangles: 4 x 4" 45°, 5 x 8¾" 60°, 4⅝ x 10" 65°, 7 x 19½" 80°
four pearwood French curves, two signed *HUDELO: A.PARIS.*, all with original owner's initials *A.H.L.*
one pearwood French curve, unmarked
93 pearwood railroad curves, each stamped with an identifying number

Signatures:

ELLIOTT BROS^s 449 STRAND LONDON or *ELLIOTT* on most instruments, except as noted. Also owner's name or initials *A.H. Locock* or *A.H.L.* on engraving plate of case and on most instruments, stamped in block Roman letters on wood and engraved in a flourished script on metal and ivory.

24. English, second or third quarter, 19th-century

William Elliott, et al

Set of instruments and an accumulation of rules, all contained in a large case veneered in walnut burl with nickel silver bandings and corners.

Case:

36.7cm (14½") long, 13.8cm (5½") deep, 11cm (4¼") high; mahogany, veneered in walnut burl (small chips to the veneer), with in-set nickel silver bandings and decorative eased-edge corners, the top centered with a decoratively shaped vacant rectangular nickel silver engraving plate, the front with a similarly shaped keyhole escutcheon; the inside of the top built up with wood slats and then lined in padded dark purple velvet; the upper mahogany tray fitted and lined in velvet; the lower mahogany tray unlined and lacking its single lateral divider; the bottom of the case divided into three sections, with one section fitted with slots for 12½" rules and with a further divider.

Contents:

In the top tray are seventeen instruments in nickel silver, steel, and ivory:

- 4¼" hairspring divider
- 6¼" compasses with one fixed hinged needle-point divider leg and provision for a removable divider leg [lacking]
- hinged ink and pencil legs for above
- extension leg for above
- pair of 4" ink and pencil compasses with hinged legs
- ¾" spring bow pencil compasses
- 2½" spring bow pencil compasses
- 2½" spring bow needle-point divider
- 3" spring bow ink compasses
- 3" spring bow divider
- 3" spring bow needle-point divider
- 3" spring bow ink compasses (probably a replacement as a 2½" spring bow would fit the space)
- double-ended steel spanner adjustment tool
- ivory-handled ruling pen with fixed blades
- ivory-handled ruling pen with one fixed and one hinged blade

In the second tray are:

- small ivoroid cylinder with pull-off top holding six pen nibs stamped MADE IN ENGLAND
- 10½" mahogany straight-edge with beveled ebony edge to one side

6" ivory rectangular protractor with one scale on the front, and on the back a scale of chords, a double diagonal-divided scale reading to hundredths of a half-inch and to hundredths of a quarter-inch, and a scale marked *6 INCHES TO A MILE*, signed *ELLIOTT 56 STRAND LONDON*

6" semi-circular celluloid protractor numbered in both directions

5" yellowed plastic 45° triangle

6" warped greenish plastic 45° triangle

cloudy yellowed plastic French curve

two pearwood French curves, one with penciled owner's monogram

In the lower portion of the case are eight rules, each around 12³/₈" long:

ivory, signed * *AGNEW & ZANETTI . MANCHESTER* *, gently double-beveled front with a different engineers' scale on each edge, divided in both directions, back blank, three old owners' names incompletely scraped away, a fourth remaining.

ivory, signed w. *elliott. 268 high holborn london*, double-beveled front with a vertical line across the rule at the center setting the zero point for each edge, and with duplicate scales on each edge measuring out from the center at 100 divisions per inch, accented every five, and numbered every 50, back blank.

ivory, signed w. *elliott. 268 high holborn london*, double-beveled front with one edge divided 80 divisions per inch and numbered in both directions, the other edge marked feet but with divisions that do not reveal their scale.

pearwood, signed *watson & son 313 high holborn london*, double-beveled front with a scale of inches on each edge reading in both directions, back blank, one owner's name on the back, another's monogram on the front.

ivory, signed *stanley london*, the face slightly convex with double side-by-side scales for millimeters and inches reading vertically for conversions (?), the back flat with side-by-side scales reading vertically for kilogram per metre and lbS per foot.

ivory, signed *c.h.job & co. london*, double-beveled front, sawn down from probably 18" original length, on the front a scale of inches and six architects' scales, on the back seven unusual architects' scales (e.g. 2¹/₄" per foot).

ivory, unsigned, double-beveled front, scales on both sides, sawn down from greater length thus making most scales unidentifiable and unusable

boxwood, unsigned, gently double-beveled front with identical scale of 1/2" per foot on each edge.

Signatures:

W. ELLIOTT. 268 HIGH HOLBORN LONDON on two rules, *ELLIOTT 56 STRAND LONDON* on the rectangular protractor, *STANLEY LONDON* on one rule, *WATSON & SON 313 HIGH HOLBORN LONDON* on one rule, * *AGNEW & ZANETTI . MANCHESTER* * on one rule, *IMPERIAL COLLEGE BOOKSTALL*

SOUTH KENSINGTON on plastic French curve, *BRITISH MADE* on one triangle; various owners' names: *C.H. JOB & CO. LONDON* stamped on one ivory rule and *CHJ* monogram cut into one boxwood rule, *JAMES RIGG* stamped on the front of one ivory rule and *R J RIGG* scratched on the back of another, *J E Holden.* with scribed lines above and below scratched onto the back of one boxwood rule in an elegant script, *D.A. RICHMOND* scratched onto one triangle, *BUCHANAN* scratched onto the semi-circular protractor, three former owners' names removed from the oldest ivory rule.

25. English, third quarter 19th-century

Elliott Brothers

A mahogany-cased set of instruments for a military man.

Case:

35.3cm (13⁷/₈") long, 11.5cm (4¹/₂") deep, 4.5cm (1³/₄") thick; mahogany, the top secured with small brass screws and centered with a decoratively shaped vacant rectangular brass engraving plate, the front with a circular brass keyhole escutcheon and two swinging brass catches, the bottom with two long shrinkage cracks; the inside of the top lined in padded dark blue velvet; a mahogany tray fitted and lined in blue velvet, lifting to reveal unlined compartments for a triangle and two scales.

Contents:

5" brass divider with fixed steel legs

6" brass compasses with one fixed and one removable steel divider leg

Hinged pencil leg and hinged ink leg with fixed blades for the above

Pair of 3¹/₂" ink and pencil compasses with finial-shaped handles

Ruling pen having an unusual octagonal brass ferrule inset with fixed steel blades and with an ivory handle with elegantly turned ball-and-finial shaped end

Smaller ruling pen with fixed blades and ivory handle (finial end broken off)

Thin pencil (stamped a.w. faber № 3) with ivory end and ball finial

Small steel screwdriver and spanner adjustment tool

6" ivory rectangular protractor, with nine architects' scales and a scale of chords on the front, plus

Six engineers' scales, a logarithmic C scale, and a double diagonal-divided scale readable to hundredths of a half-inch and to hundredths of a quarter inch on the back

6" ivory parallel rule with decoratively shaped brass linkages and operating pins

6" ivory sector with various scales

A standard set of two boxwood Marquois scales (each 31.5cm (12³/₈") long with four scales) and triangle.

Signature:

ELLIOTT BROS 449 STRAND LONDON on the triangle and wood scales, *ELLIOTT BROS LONDON* on the ivory protractor/scale, *ELLIOTT* on one pen, *R ↑ D* on the joint of the sector.

26. English, circa 1875

William Ford Stanley et al

Set of variously signed nickel silver drawing instruments in a large mahogany case.

Case:

37.4cm (14³/₄") long, 19.2cm (7³/₄") deep, 10.3cm (4") high; mahogany with hand-dovetailed corners, the front with a decoratively shaped set-in keyhole escutcheon of ebony-stained mahogany (?) and a later set-in shaped rectangular brass plate hand-engraved with the owner's name *Edw^d M. Munro* in script; the top opening only to 90 degrees, unlined, but with extra trim to exclude dust; the bottom now only partially lined in purple velvet; the lift-out mahogany tray lined in purple velvet, decoratively embossed and fitted.

Contents:

Instruments in nickel silver, steel, and ivory:

compasses, 16cm (6¹/₄") long, with hinged pencil leg and hinged removable needle-point divider leg, plus second hinged needle-point divider leg, hinged ink leg, and extension leg

hairspring dividers

pair of small ink and pencil compasses with hinged legs and knurled finial handles

trio of spring bows with turned ivory handles with finial ends

a pair of fittings for a beam compass with ink, pencil, needle-pointed legs

small ivory-handled ruling pen (signed *REYNOLDS*)

large ruling pen with square-sided grip

steel-pointed ivory-handled tracer or pin-pricker (signed *STANLEY*)

ivory-handled needle-pointed pricker, the top unscrewing to reveal a compartment for spare needles

27. English, circa 1872

W.F. Stanley & Co.

Set of drawing instruments in three-level rosewood-veneered mahogany case with a long presentation inscription on a silver engraving plate.

Case:

20cm (8") wide, 16cm (6¼") deep, 6.7cm (2⅝") high; mahogany, veneered in dark rosewood, with keyhole escutcheon with in-cut reverse radius corners (key present) and similarly-shaped silver engraving plate to the top, with padded blue velvet inside the top; the top tray fitted and lined in blue velvet, the second tray divided for watercolor cakes (not present) and an open area for accessories, the bottom part-lined in purple velvet and divided for scales, parallel rule and accessories.

Contents:

Ivory parallel rule with shaped nickel silver linkages

Ivory scale (old long chip) with shaped end and with six scales to the front and two scales plus double-diagonal-divided scale to the back

Three non-matching round ceramic watercolor mixing pans

Steel combination tool: file, screwdriver, knife, adjustment spanner

13 instruments in nickel silver and ivory:

hairspring divider

compasses 16cm (6¼") long, with one fixed and one removable needle-point hinged divider leg

hinged ink leg with hinged blade, hinged pencil leg, and extension leg, all for above (all marked 79)

pair of double-hinged ink and pencil leg compasses with 5-knopped knurled round-end handles

set of three ink, pencil, and divider spring bows

ruling pen with ivory handle with square grip and decoratively turned finial end

two hinged-blade ruling pens each with ivory handle with decoratively turn finial end

Signatures:

STANLEY LONDON on parallel rule, *STANLEY* on ruling pen, *HARLING LONDON* on ruling pen, *HARLING* on adjustment tool; the presentation inscription reading *Presented to M^R THOMAS LOCKERBIE, C.E. by the Mechanics at the Landare New Steel Works, Swansea, as a small token of the high regard of his many good qualities. 19 APL. 1872.*

28. English, fourth quarter 19th-century

Unsigned [likely by William Ford Stanley]

Set of nickel silver and ivory drawing instruments in brass bound rosewood case.

Case:

23.5cm (9¼") long, 14.5cm (5¾") deep, 4.5cm (1¾") high; mahogany, veneered in figured rosewood, with round-edged brass edge-banding and inset brass trim to the top, with round-cornered brass engraving plate to top, and shaped brass keyhole escutcheon, the top lined in a blue velvet-covered panel lifting to reveal a compartment lined in blue watered silk; fitted mahogany tray lined in blue velvet, lifting out to reveal an undivided compartment below.

Contents:

Fourteen instruments in nickel silver, steel, and ivory:

hairspring dividers

compasses 16.5cm (6½") long with one fixed and one removable needle-point divider leg, both hinged

hinged pen and pencil legs and extension leg

pair of small pencil and pen hinged-leg compasses with triple-knopped and knurled finial handles

trio of small pencil, pen, and divider spring-bow compasses

ivory-handled ruling pen with fixed blades and finial end

ivory-handled ruling pen with square grip, hinged blade, and finial end

adjustment spanner tool

cylindrical white-metal lead case (probably an early replacement)

Signature:

None, but the brass plate on the top is well engraved in script, *Walter C. Chambers*; most of the instruments are engraved *J.C.W.* and a Clinograph (an angle-adjustable device shown in the 1913 Keuffel & Esser catalogue) that was found with the set is signed in pencil *J.C. Ward 1913*.

29. English, fourth quarter 19th-century

William Ford Stanley (1829-1909)

Nickel silver, ivory, and ebony drawing instruments in oak case.

Case:

26.8cm (10½") long, 15.5cm (6¼") deep, 7.5cm (2⅞") high, machine-dovetailed oak case with plated metal corners and bandings; vacant elliptical engraving plate to the top, screw-on circular lock escutcheon, top lined in padded blue watered silk; tray with divided space below.

Contents:

Ivory rectangular protractor 15.2cm (6") x 4.3cm (1⅝") with five scales (including a scale of chords) on front plus seven scales on back, one of which is double-diagonal-divided

Ivory double-beveled architect's scale rule with four scales on front and four on back; long chip to one corner

Ebony parallel rule with shaped brass linkages and buttons

Eighteen instruments in nickel silver, steel, and ivory:

hairspring dividers

compasses, 16.3cm (6½") long with fixed hinged changeable needle point and removable pencil leg and with hinged changeable needle point leg, hinged ink leg, and extension leg

trio of small pencil, ink, and divider spring bow compasses

pair of small pencil and ink hinged-leg compasses with finial-shaped handles

pair of fittings for a beam compass, with interchangeable pencil, ink, and divider legs

three ivory-handled ruling pens with turned finial ends, one with hinged blade

ivory-handled pin-pricker with removable needle and handle unscrewing near the top to reveal a compartment for spare needles

steel adjustment tool

Signature:

STANLEY on some instruments, *STANLEY GREAT TURNSTILE HOLBORN LONDON* on protractor and scale, and *STANLEY GREAT TURNSTILE HOLBORN LONDON TO H.M. GOVERNMENT* gold-stamped on lining to lid

30. English, fourth quarter 19th-century

William Ford Stanley (1829-1909)

Nickel silver and ivory drawing instruments in oak case.

Case:

27.5cm (10 $\frac{7}{8}$ ") long, 18.4cm (7 $\frac{1}{4}$ ") deep, 7.5cm (3") high, machine-dovetailed figured oak case with vacant elliptical plated-metal engraving plate to the top, two locks, each signed *HOBBS & CO LONDON* and each with set-in elliptical keyhole escutcheon; top lined in padded blue watered silk; top tray fitted for instruments with blue velvet lining, second tray unfitted with mahogany bottom, base unfitted below.

Contents:

Twenty instruments in nickel silver, steel, and ivory:

- proportional dividers 16.4cm (6 $\frac{1}{2}$ ") long, with scales for lines, lineal ratios, plans, and solids
- dividers
- hairspring dividers
- compasses with fixed and removable hinged divider legs with changeable needle points and
 - with hinged pencil peg, hinged ink leg, and extension leg
- trio of unusually small pencil, ink, and divider spring bow compasses
- pair of small pencil and ink double-hinged-leg compasses with triple rib-knopped handles
- five ivory-handled ruling pens with turned finial ends, two with hinged blades
- ivory-handled pin-pricker with removable needle and handle unscrewing near the top to
 - reveal a compartment for spare needles
- screw-top short ivory case for spare leads, and steel adjustment tool

Loose in lower tray:

- small fixed-interval "brick-scale" tool for setting off intervals of 9" and 4 $\frac{1}{2}$ " at eighth-scale
- normal-size spring bow divider (same pattern as those in upper tray)
- emery-paper sharpening board, with label on back: *Geo. Rowney & Co. London, W.*
- stamped-metal tack lifter
- black-painted wood tube of pencil leads stamped *L. & C. HARDTMUTH AUSTRIA N^o 4*
- paintbrush with painted black handle stamped *1 Müller*

Signature:

STANLEY or *STANLEY PATENTEE* on some instruments, *Stanley Gt. Turnstile, London* italic-engraved on proportional divider, *ARMY & NAVY C.S.L.* on one ruling pen, and *STANLEY / TO H.M. GOVERNMENT / GREAT TURNSTILE / HOLBORN W.C. / & RAILWAY TERMINUS / LONDON BRIDGE* gold-stamped with flourished heraldic achievement on lining to lid.

31. English, fourth quarter 19th-century

Negretti and Zambra

Set of nickel silver drawing instruments in a leather-covered wood case.

Case:

17.2cm (6¾") wide, 7cm (2⅞") deep, 2.5cm (1") high; wood covered on top with maroon Morocco-grained leather, blind tooled with border lines, with interior of top lined in padded dark blue silk, bottom covered with maroon textured cloth imitating leather, interior of bottom fitted and lined in dark blue velvet, press catch, vacant rectangular silver engraving plate to top

Contents:

Seven instruments in nickel silver and ivory:

- compasses 15.8cm (6⅛") long, with one fixed and one removable splined friction-fit divider leg and with hinged pencil leg, hinged ink leg with hinged blade, and extension leg
- small pencil compass with finial-shaped handle
- small ink compass with hinged blade and finial-shaped handle
- ivory handled ruling pen with hinged blade and square-grip handle with finial-shaped end

Signature:

NEGRETTI & ZAMBRA LONDON within decorative cartouche, gold-stamped on lining of top

32. English, fourth quarter 19th-century

William Ford Stanley (1829-1909) [?]; Beach & Co. Ltd. [retailer?]

Set of drawing instruments used by a surveyor in burl-veneered brass-bound case.

Case:

20.3cm (8") wide, 17cm (6¾") deep, 7.7cm (3") high; mahogany, veneered in figured burled walnut, with brass corners, reinforcements, rectangular keyhole escutcheon with in-cut reverse radius corners, and similarly shaped vacant engraving plate to the top, with blue padded watered silk inside the top; the top tray fitted and lined in blue velvet, the second tray divided for watercolor cakes (not present) and accessories, the bottom part-lined in blue velvet and divided for scales, sector, parallel rule and accessories. Key for original lock present.

Contents:

Unsigned 6" ivory sector with nickel silver joint

Three 6" (nominal) double bevel beechwood (?) and ivory (ivoroid?) surveyor's scales

Two 2" offset beechwood (?) and ivory (ivoroid?) surveyor's scales

15 instruments in nickel silver and ivory:

- hairspring divider

- compasses, 16cm (6¼") long, with one fixed and one removable needle-point hinged divider leg

- hinged ink leg with hinged blade, hinged pencil leg, and extension leg, all for above pair of small double-hinged ink and pencil leg compasses with triple-knopped knurled handles

- set of three ink, pencil, and divider spring bows

- proportional divider with scales for lines and circles

- ruling pen with ivory handle with square grip and decoratively turned finial end

- railroad ruling pen with ivory handle with decoratively turned finial end

- needle-point pin-pricker with ivory handle with decoratively turned finial end, unscrewing to reveal hidden compartment for spare needles

- plated metal cylindrical case for spare leads

Signatures:

Beach & Co., 89 Gt. Queen Street, London, W.C. gold-stamped within a frame whose shape matches the shape of the escutcheon and the engraving plate on the case; *BEACH* on ruling pen handle; *Cooke, Troughton & Simms Ltd. London, York & Cape Town* on the 6" scales; *A.G. Thornton Ltd Manchester* on the front of the 2" scales and *A.A.C. Ltd. Surveying Department Ammanford* on the back of the 2" scales.

33. English, fourth quarter 19th-century

William Ford Stanley (1829-1909)

Set of brass, steel, and ivory drawing instruments in a mahogany case.

Case:

19.8cm (7¾") wide, 15.7cm (6¼") deep, 5.2cm (2⅛") high; mahogany with machine-dovetailed corners, brass-plated securing pins, round keyhole escutcheon to front, and vacant elliptical engraving plate to top; the inside of the top lined in padded blue silk, the base divided and unlined, the mahogany lift-out tray fitted and lined in blue velvet

Contents:

6-inch ivory rectangular protractor numbered in both directions, with four architects' scales and a scale of chords on the front, and on the back seven engineers' scales and a double diagonal-divided scale reading to one-hundredth of a half-inch on one scale and one-hundredth of a quarter-inch on the other

Two ivory rules divided over 6 inches. one with eight scales, the other with seven

15 instruments in brass, steel, and ivory:

- dividers

- compasses with one fixed and one removable divider leg plus extension leg and hinged pencil and ink legs

- pair of ink and pencil compasses with hinged legs and triple knurled-knop handles

- trio of all-steel divider, pencil, and ink spring bows with seven-sided integral finial-topped handles

- two ruling pens with turned finial-topped ivory handles, one with fixed blades, the other with a hinged blade and a square-grip handle

- an ivory handle pin-pricker with holder for replaceable needle points

- small steel spanner/screw-driver adjustment tool

- large steel file/spanner/screw-driver/ knife adjustment tool (knife blade broken off)

Signatures:

STANLEY GREAT TURNSTILE HOLBORN LONDON stamped on the protractor and rules and gold-stamped onto the lid lining silk within a decorative ribboned cartouche, and *STANLEY* stamped into the ivory handles of two of the instruments

34. English, second half 19th-century

Unattributed

Set of brass, steel, and ivory drawing instruments in a mahogany case.

Case:

19.9cm (7⁷/₈") wide, 13.8cm (5¹/₄") deep, 4.3cm (1³/₄") thick; mahogany with mitered and splined corners, the top set with a vacant decorative rectangular brass-plated engraving plate, lock and keyhole escutcheon completely removed; the interior of the top lined in padded blue velvet, the empty bottom divided and partially lined in blue velvet; the mahogany tray fitted and lined in blue velvet

Contents:

Ten instruments in brass, steel, and ivory:

- hairspring divider

- compasses with one fixed and one removable divider leg, plus extension leg and hinged ink and pencil legs

- small pencil compass with finial-shaped handle

- small compass with hinged ink leg and finial-shaped handle

- three ruling pens, one with fixed blades, the others with a hinged blade, all with ivory handles with elegantly turned finial ends

35. English, fourth quarter, 19th-century

A. G. Thornton

Set of polished nickel silver instruments in a rosewood-veneered mahogany case with provision for watercolor paint blocks.

Case:

20.4cm (8") wide, 16cm (6¼") deep, 6cm (2⅜") high; mahogany, with rosewood veneer; the top with vacant shaped inset rectangular nickel silver engraving plate, the front with similarly shaped keyhole escutcheon, the inside of the top lined in padded purple watered silk, the bottom with mahogany dividers fitted for watercolor cakes and accessories and partly lined in dark purple silk velvet; the mahogany tray fitted and lined in purple velvet.

Contents:

Instruments in polished nickel silver and steel:

6" compasses with fixed hinged needle-point divider leg and interchangeable hinged ink and pencil legs and extension leg

5¼" hairspring dividers

pair of 3¾" ink and pencil compasses with hinged legs and triple knurled-knop finial handles

trio of ink, pencil, and divider spring bows with finial handles

ruling pen with fixed blades and ivory handle with decoratively-turned finial end

ruling pen with hinged blade and ivory handle with decoratively-turned finial end

steel adjustment tool with two sizes of screw-driver and spanner

small cylindrical ivory screw-top container for spare needle-points and leads

remains of watercolor cakes and Chinese ink sticks

Signatures:

A.G.THORNTON ST. MARY'S ST DEANS GATE MANCHESTER gold-stamped on the silk lining inside the top; *THORNTON* on the instruments with *R^D N^O 354874* on some instruments.

36. English, second half 19th-century

Unattributed

Mahogany-cased set of brass instruments, possibly for a student.

Case:

23.8cm (9 $\frac{3}{8}$ ") wide, 13cm (5 $\frac{1}{8}$ ") deep, 4.5cm (1 $\frac{7}{8}$ ") high; mahogany with machine-dovetailed corners, the top cushion-domed with inset rectangular brass engraving plate, the front with inset circular brass keyhole escutcheon; the inside of the top lined with padded blue watered-silk; the bottom unlined and undivided; the mahogany tray fitted and lined in blue cotton velvet.

Contents:

Ruling pen with hinged blade and ivory handle with decoratively-turned finial end

[lacking second fixed-blade ruling pen]

[two empty small spaces in tray for accessory legs(?)]

Simple steel adjustment spanner

Small cylindrical brass container for spare needles and leads

Small thin brass semi-circular protractor scale stamped with numbers in both directions every ten degrees

4 $\frac{3}{4}$ " 45° maple tringle

7" 30° pearwood triangle

6 $\frac{1}{4}$ " 22 $\frac{1}{2}$ ° cedar triangle

Instruments in brass and steel:

6 $\frac{1}{4}$ " compasses with fixed hinged needle-point divider leg and interchangeable straight divider leg, extension leg, and hinged ink and pencil legs

4 $\frac{3}{4}$ " dividers

4" compasses with fixed hinged needle-point divider leg and interchangeable hinged ink and pencil legs [lacking straight divider leg]

3 $\frac{3}{4}$ " compasses with handle and with fixed needle-point leg [lacking needle and fixing-screw] and interchangeable straight divider leg and hinged ink and pencil legs

37. English, third or fourth quarter 19th-century

William Cary

Set of drawing instruments for military use in a steel case designed for tropical or field use.

Case:

33cm (13") long, 11.2cm (4½") deep, 3.6cm (1½") high; black japanned steel with two bent-metal catches, the outside of the top with a thick brass rectangular engraving plate, the inside of the top lined in maroon velvet, containing a black japanned tray with the left side fitted and lined in maroon velvet, the right side with two compartments for scales and accessories, the tray lifting out to reveal compartments for scales, and provision for the triangle.

Contents:

6-inch ivory rectangular protractor/rule with a scale on the front whose divisions extend across the rule in alternating red and black lines; and on the back with a scale of chords, a scale marked yards *YARDS 6 IN^S TO A MILE*, and a double-diagonal-divided scale of inches

6-inch ivory rectangular protractor/rule with a scale on the front marked *6 IN TO M. Y^{DS}* whose divisions extend across the rule; and on the back a scale marked *8 TO M. YARDS* and another marked *8 TO M. PACES*; with two parallel slots cut through the rule; and with two stamped signatures

Three 12-inch boxwood scales; one [with corner lacking] marked *1 FOOT TO 1 INCH R.F. 1/12*, and *METRES R.F. 1/100*; the second marked *2 FEET TO 1 INCH R.F. 1/24*, and *4 FEET TO 1 INCH R.F. 1/48*; the third marked *6 FEET TO 1 INCH R.F. 1/60*, and *2½ FEET TO 1 INCH R.F. 1/50*

Two 12-inch boxwood Marquois scales, each with two different divisions on each side; and an 11-inch boxwood Marquois triangle

Two ivory-handled rulings pens, each with hinged blade and turned finial end

Four instruments in nickel silver with steel points and knurled adjustment screws:

- pair of compasses with one fixed and one removable divider leg

- hinge-joint ink leg with hinged blade

- hinge-joint pencil leg

- small combination compasses with knurled handle with ball finial end, a hinge-joint needle-point divider leg to one side, and a hinge-joint leg to the other that swivels to present either a pencil leg or an ink leg with hinged blade

Also present: three quill pens, one fitted with a silver nib-holder and a gold nib

Signatures:

R.A.F.C. engraved on six pieces and R.A.F. CHARD engraved on cover plate; *CARY LONDON* stamped on most pieces; *THOMAS JONES & RUPERT ST LONDON* and W.W. CHARD stamped on one ivory scale.

38. In the English style, [?] late 19th- or early 20th-century

Set of instruments made in imitation of the 19th-century English style [probably in the 20th-century, perhaps in India].

Case:

27cm (10⁵/₈") wide, 19.7cm (7³/₄") deep, 4cm (1¹/₄") thick; wood, covered in embossed black paper imitating leather, a vacant rectangular aluminum engraving plate affixed to the top with aluminum pins, with two long metal hinges and closing with two metal snap catches, the interior of the top lined with padded black fabric (rayon?), opening to reveal a space for the protractor, lined in a striped paper of a non-repeating pattern (handmade?), the bottom fitted and lined in black cotton velvet with green-paper trim.

Contents:

5¹/₄" compasses with one fixed and one removable hinged needle-point divider leg extension leg and hinged ink and pencil legs for above

Pair of ink and pencil compasses with hinged legs, needle-points, and triple-knurled-knop handles

Trio of ink, pencil, and divider spring bow compasses

Proportional divider with scales for lines, circles, planes, and solids

Three ivory-handled ruling pens with square grips and decoratively-turned finial ends, each with the top portion unscrewing to reveal a pin-pricker

Ivory-handled swivel-head ruling pen for curved lines with turned ball end

Ivory-handled swivel-head railroad ruling pen for curved lines with turned ball end

Ivory-handled swivel-head railroad ruling pen for straight lines with decoratively-turned finial end

Ivory-handled dotting-wheel ruling pen with decoratively turned screw-top end compartment containing three additional dotting wheels

Ebony-handled replaceable-needle pin-pricker

Two steel adjustment tools

9¹/₂" semi-circular flexible yellowish clear plastic protractor numbered in both directions every ten degrees and divided to half-degrees, and with two smaller supplemental inner arcs, numbered clockwise in quarter-arcs as a full circle starting with 0 at the top

[apparently lacking a hairspring divider]

[Apparently lacking a pair of beam-compass fittings (there are empty appropriate spaces for them but ink and needle-point legs for them are present)]

Series IV: Continental Sets

39. French, middle 18th-century

Sautout Choizy

Set of engraved brass field instruments in a silver-decorated leather case.

Case:

3¾" long, 1" wide at the top; a wood étui of rectangular section covered in black leather, with a silver press-catch, silver hinge, and small decorative silver studs [several lacking].

Contents:

3⅜" brass divider with steel points and double-leaf brass joint

3⅛" porte-crayon (lead holder) with decoratively turned baluster finial end and sliding retaining ring

3⅜" (6⅜" when fully open) folding brass rule with decoratively shaped joint-reinforcement element and an alignment pin, hand-engraved *Demi pied de Roy* and *Lignes*, and reading to 6 *pouce*, each end unit divided in twelve, the joint engraved on each face with a traditional flower-and-leaf design.

Signature:

Sautout Choizy AParis engraved in script on the rule.

40. French, second half 18th-century

Pair of brass drawing instruments in a heavy homemade leather field case.

Case:

13.5cm (5 $\frac{3}{8}$ ") long, 3.5cm (1 $\frac{3}{8}$ ") wide, 1.8cm ($\frac{3}{4}$ ") at its thickest point; shaped hard leather, sewn together in two sections, then glued together and covered in thinner light-brown leather which has been hand-tooled with straight lines in two directions that recall the engraved linear divisions on the brass scale. One end is open; the other is shaped and closed.

Contents:

5 $\frac{7}{8}$ " brass dividers with steel points and double-leaf brass joint

6 $\frac{1}{2}$ " brass scale with one edge beveled

both sides are divided longitudinally into ten equal spaces; one side is cross-divided into a scale of 20 equal units that are neither English nor metric, the left-end unit subdivided into ten spaces and further diagonal-divided, effectively providing readings to hundredths of a unit; the reverse side is divided into ten units, each double the size of the units on the front, with the right-end unit diagonal-divided into ten spaces, and each of the two left end units diagonal-divided into five spaces.

41. French, second half 18th-century

Vallogne

Silver-mounted leather-covered cylindrical wood étui of silver drawing instruments (incomplete) which may have formed the handle to a walking stick.

Case:

15.5cm (6 $\frac{1}{8}$ ") long, 2.6cm (1") diameter; wood cylinder, covered in black leather, silver hinge, decorative silver nail-head trim [lacking several nails], interior of top silver-lined, and with cut-out silver cap to lower section; the bottom with open female-threaded compartment.

Contents:

3 $\frac{1}{8}$ " silver divider with steel points and steel/silver double-leaf hinge joint

3 $\frac{5}{8}$ " silver pen with octagonal center section and male-threaded end

3 $\frac{3}{8}$ " (opens to 6 $\frac{3}{8}$ ") silver rule with decoratively shaped joint-reinforcement element and two alignment pins, engraved with three flowers (with stems and leaves), engraved *Demi Pied de Roi* and divided into 6 *pouce*, the end units subdivided in 12 and numbered by hand every 3 sub-units.

[Lacking are probably a handle and a porte-crayon (lead holder), for which there are spaces in the case]

Signature:

Vallogne A Paris in a hand-engraved flourished script.

42. French, second half 18th-century

Silver-mounted leather-covered cylindrical wood étui of silver drawing instruments incorporating a portable inkwell and engraved with a monogram and a crown.

Case:

12.5cm (5") long, 2.6cm (1") widest diameter; wood cylinder, covered in black leather, with silver fittings and decorative silver nail-head trim [lacking several nails], the top opening on a silver hinge, the bottom unscrewing to reveal a bulbous inkwell, the extreme end of this section further unscrewing to reveal a compartment.

Contents:

3 $\frac{3}{8}$ " (opens to 6 $\frac{3}{8}$ ") silver rule with decoratively shaped joint-reinforcement element and alignment pin, engraved with stylized flowers and leaves, engraved *Demi pied de Roy* and divided into 6 *pouce*, the end units subdivided in 12 and numbered by hand every 3 sub-units.

3 $\frac{1}{8}$ " silver divider with steel points and steel/silver double-leaf hinge joint

Silver and ebony porte-crayon (lead holder) with female-threaded end

Silver and ebony pen with male-threaded end

Silver and ebony tracing stylus with male-threaded end

43. French, fourth quarter 18th-century

Pigeon à Lyon

Set of brass and steel drawing instruments in large leather-covered wood etui.

Case:

Of étui form, 18.8cm (7³/₈") long, 8.5cm (3³/₈") wide at top; wood, covered in pebble-grained black leather; interior sectioning built up of thin wood sheets; single-leaf brass hinge secured with brass pins.

Contents:

Ten items in brass with steel points plus two additional items:

- walnut straight-edge with one edge decoratively shaped, several old nicks
- semi-circular protractor of thin transparent yellowed horn or mica (many old flakey chips),
hand-engraved in both directions with radial lines every ten degrees; appears
contemporary to set
- semi-circular brass protractor engraved in both directions
- hinged folding square/scale 16.9cm (6⁵/₈") long, with a scale on one arm marked *Echelle*
divided as a scale of equal parts diagonal-divided to read to one-hundredth of a French
half-inch, the other arm with scales marked *Pouces*, *Demi Pied de Roy*, and *Demi Pied du*
Rhin, and with a string hole, a cut-out for the plumb bob, and a scribed plumb line.
- plumb bob with string hole
- sector with flower-decorated joint, decorative joint leaf and two alignment pins, and with
scales hand-engraved and identified in script as *les Cordes*, *les parties Egales*, *les Solides*, *les*
Metaux, *les poligones*, *les plans*, and *Calibre des pieces*
- large compasses with one fixed and one removable divider leg, normal twin-blade
adjustable hinged ink leg, second ink leg with unusual single grooved blade, and odd
dotting wheel (?) ink leg without wheel (may be later addition)
- small divider (the divider and compasses of typically French "bandy-legged" form)
- two-ended baluster-handled tool with crayon leg to one end and early-pattern broad-blade
ruling pen to the other, each with slide-ring adjuster/retainer

Signatures:

Pigeon ALyons engraved on protractor and folding square, *Pigeon ALion* engraved on sector. The *P* and the *8*s are different on the protractor from the other two instruments; the two *P*s and the numbers match on the sector and square notwithstanding the different spelling of the city on those two instruments.

44. French, 1789

Brière

Silver set of drawing and calculating instruments in a chamois-lined leather-covered wood case.

Case:

19.3cm (7⁵/₈") wide, (9.5cm (4³/₄") deep, 3cm (1¹/₈") high; wood, rounded corners, covered in Morocco-grained black leather on all sides with blind-tooled border lines, press-catch, lined in tan chamois leather, top concealing a recessed compartment for the protractor, bottom with recessed fitted compartments for three flat instruments and lift-out tray fitted for instruments and fully covered in same chamois; inside walls of lower base lined in maroon leather (apparently applied over earlier red leather).

Contents:

Silver semi-circular protractor 11.1cm (4³/₈") diameter, hand-engraved in both directions, with beveled inset base and decorative center indicator

Same-size protractor of thin transparent horn or mica, hand-engraved in both directions with radial lines every ten degrees; appears contemporary to the set

Silver hinged folding square/scale 16.7cm (6¹/₂") long, with a scale on one arm diagonal-divided to read to one-hundredth of the scale unit (undetermined: neither centimeters nor French, English, or Russian inches), other leg scribed with a *ligne à plomb* (aligning with a hole and cut-out for plumb bob (no place for one in the case) and a scale of French inches identified in engraved script as *Demi Pied de Roi*

Silver sector with flower-decorated joint, decorative steel joint leaf and alignment pin [lacking second pin], and with scales hand-engraved and identified in script as *Les Cordes, les Solides, les Metaux, poides des boulets, Les Parties Egales, les plans, and les poligones*

Ebony straight-edge with one decorative edge, old chip to one end

Eight silver instruments in silver with steel points, with typically French "bandy-legged" dividers and slide-fittings to pencil holders:

- medium divider with fixed legs

- large compasses 16.5cm (6¹/₂") long, with one fixed and one removable divider leg, and with pencil leg and ink leg (unusual single grooved blade)

- small compasses 9.5cm (3³/₄") long, with one fixed and one removable divider leg and with pencil leg and ink leg (unusual single grooved blade)

Polygonal-shaft tool with double-bladed ruling pen to one end and a pencil holder to the other, the decorative center banding unscrewing to reveal a hidden double-ended tracer and pin-pricker (with a removable needle point)

Signature:

Brière fecit 1789 À Paris engraved in script on the protractor, sector, and folding rule.

45. French, fourth quarter 18th-century

Jacques Nicholas Surcou (b. 1758)

Brass drawing and calculating instruments in mahogany-veneered wood case

Case:

19.8cm (7¾") wide, 10.9cm (4¼") deep, 4.5cm (1¾") high; pine veneered in mahogany with ebonized stringing to the edge, bottom unveneered exposed pine, with vacant brass engraving shield to top, similar brass keyhole escutcheon, top lined in padded green silk, bottom divided and lined in green velvet, tray fitted and lined in green velvet with green silk to the outside.

Contents:

Brass semi-circular protractor 16.3cm (6⅜") diameter divided in both directions to half-degrees with hand-engraved numbers, with beveled inset base and decorative center indicator

Brass sector with flower-decorated joint, decorative brass joint leaf and alignment pins, and with scales hand-engraved and identified in script as *les Cordes*, *les Solides*, *les Metaux*, *Les Parties Egales*, and *les polygones*

Brass hinged folding square/scale 17cm (6¾") long, with a scale on one arm diagonal-divided to read to one-hundredth of the scale unit (undetermined: neither centimeters nor French, English, or Russian inches), other leg scribed with a plumb line aligning with a hole and cut-out for the plumb bob, a scale of French inches identified in engraved script as *6 P de France*, and a scale of centimeters identified in engraved script as *1 Decimetre*

Eleven instruments in brass with steel points:

medium divider with fixed legs

large compasses 15.8cm (6¼") long, with one fixed and one removable divider leg and with hinged pencil leg, hinged ink leg and extension leg

small compasses 8.8cm (3⅜") long, with one fixed and one removable divider leg and with hinged pencil leg and hinged ink leg

plumb bob with old string attached

polygonal-shaft tool with double-bladed ruling pen to one end and a pencil holder to the other, the decorative center banding unscrewing to reveal a hidden double-ended tracer and pin-pricker (with an unusual removable needle point)

[An empty place in the bottom of the case suggests a lacking customary plain ebony straight-edge.]

Signatures:

Surcou à Paris on the sector and the folding square, *Nebel À Paris au Butterfield* on the protractor.

46. French, fourth quarter 18th-century

Brass and steel drawing instruments in a green leather case, with a paper trade label and including a 200-degree metric semi-circular protractor with signature to match the label.

Case:

18.9cm (7½") wide, 10.5cm (4¼") deep, 3.5cm (1⅜") high; wood covered on all sides in green leather, with gold-leaf tooled border decorations (five faces with nail-head dots and the top with wavy lines and stylized wave forms), the inner edges of both top and bottom set with woven string gimp interwoven with decorative brass strips, two decorative brass catches; top lined in padded green silk which swings forward to reveal a silk-lined compartment with pocket (for the protractors) and the trade label, the bottom fitted and lined with green silk velvet.

Contents:

Semi-circular brass protractor 10cm (4") diameter, divided in both directions with hand-engraved numbers signed as above, and with divisions for a 200-degree semi-circle.

Semi-circular 180-degree protractor 9.2cm (3⅝") diameter with numbers hand-scribed in both directions and made from yellowish transparent horn, mica, or isinglass (sometimes called "green ivory").

Plain beveled-edge ebony straight-edge 16cm (6⅜") long

Nine instruments in brass with steel points:

- medium divider with fixed legs

- large compasses 16.5 cm (6½") long, with one fixed and one removable divider leg, and with hinged pencil leg, hinged ink leg, and extension leg

- small compasses 9.2cm (4½") long, with one fixed and one removable leg, and with hinged ink leg; [lacking pencil leg]

- brass ferrule ruling pen with steel blade [lacking its ivory or ebony handle]

- steel adjustment tool cut in the shape of a gothic finial

Signature:

No maker's name is given, but there is a 1½"-diameter circular paper trade label pasted inside the hidden compartment of the top, reading *"AU GRIFFON Quai de l'Horloge du Palais la 3me boutique côté du Pont-Neuf à Paris,"* and the brass protractor is engraved in an elegant script *"au Griffon quai de l'horloge à Paris"*.

47. French[?], mid-19th-century[?]

Unattributed

Set of brass and steel instruments with three small steel compasses.

Case:

Found with a homemade felt-lined carved softwood interior fitted within a tin cigar box, that interior now within a standard half-size jewelry case 21cm (8 $\frac{1}{8}$ ") wide.

Contents:

Twelve instruments in brass (bronze? red brass?) and steel with single-leaf hinges and decoratively shaped wing adjustment screws:

- compasses, 19cm (7 $\frac{1}{2}$ ") long, with one fixed and one removable divider leg, and with hinged pencil, ink, and extension legs

- compasses, 10cm (3 $\frac{7}{8}$ ") long, with one fixed and one removable divider leg, and with hinged pencil and ink legs

- divider 14.8cm (5 $\frac{3}{4}$ ") long

- pair of small spring compasses (for pencil and ink), primarily of steel

- very small steel ink drop compass

- steel double-ended ruling pen

48. French, second half 19th-century

Renaud-Tachet

Nickel silver, ivory, and steel drawing instruments in a rosewood-veneered case with nickel silver bandings and nickel silver engraving cartouche.

Case:

29cm (11 $\frac{3}{8}$ ") long, 19.8cm (7 $\frac{7}{8}$ ") deep, 5.5cm (2 $\frac{1}{4}$ ") high; wood veneered in rosewood, top with triple nickel silver bandings and centered with engraving cartouche, now vacant; circular nickel silver keyhole escutcheon (original key present); inside of top lined in padded maroon watered silk, with empty hidden pocket lined in maroon paper imitating watered silk; mahogany tray with rosewood edges, fitted and lined in maroon silk velvet; bottom of case subdivided in rosewood including fitted spaces for six water-color cakes

Contents:

Ivory rule, 21.2cm (8 $\frac{3}{8}$ ") long, 1.3cm (1 $\frac{1}{2}$ ") wide, numbered in centimeters and subdivided to half-millimeters; three old chips

Instruments in nickel silver, steel, and ivory, with single-leaf hinge joints:

- hairspring dividers

- compasses, 17.3cm (6 $\frac{7}{8}$ ") long, with one fixed replaceable needle-point divider leg and one fixed divider leg, and with pencil, ink, and extension legs

- smaller compasses as above with handle; and with pencil, ink, and extension legs

- small ivory-handled spring bow compass with removable pencil leg, and with ink leg and replaceable needle-point divider leg, lacking set screw

- proportional divider with adjustable geared pivot-point, with engraved scales for linear and circular proportions

- pair of fittings for a beam compass, one with fixed leg for replaceable needle point and with geared fine adjustment; other with removable leg for pencil lead, ink leg and pencil leg

- two ivory handled ruling pens with unusual screw-thread and hex-nut adjustment

- unusual steel double-ended ruling pen

- ivory-handled dotting-wheel ruling pen with two (of three) additional wheels

- ivory-handled double-bladed straight railroad ruling pen

- ivory-handled adjustable opisometer

- two small spanner adjustment tools, one lacking one of its points

Signatures:

Renaud-Tachet 17 Rue de Richelieu à Paris elegantly engraved in script on the lock inside the case; *TACHET A PARIS* stamped at an angle on ivory rule; *R.T. BREVETE S.G. D.G.* stamped on the ferrule of each of the two unusual ivory-handled ruling pens; *R.T DÉPO . .* within a square stamped on the steel handle of the double-ended ruling pen.

49. French, circa 1870

Unattributed

Brass and steel drawing instruments in leather-covered wood case.

Case:

20.2cm (8") long, 10.8cm (4¼") deep, 2.3cm (⅞") high; softwood covered in seed-grained black leather with gold-tooled border to top and with owner's name and date gold-stamped on top, *Paul Markert 1870* with two decoratively cut brass catches; interior lined in dark brown or black velvet; bottom and top fitted for instruments, the top with a swiveling shaped brass arm to retain the protractor, which in turn retains the triangle and straight-edge.

Contents:

Silvered brass semi-circular protractor divided and numbered in both directions, with a scale of equal parts engraved on its horizontal arm that is diagonal-divided to read to hundredths of the unit, which measures ¾ths of an inch but is numbered every 1½ inches.

Small triangle and straight-edge with traditional shaped edge made of a fine-grained softwood

Eleven items in brass, steel, and ebony:

- compasses 12.9cm (5") long, with one fixed and one removable divider leg, and with hinged pencil, ink, and extension legs
- small compasses with one fixed divider leg [lacking removable divider leg], and with hinged pencil and ink legs
- divider
- two ebony-handled ruling pens with brass ferrules
- small folding brass accessory of indeterminate usage
- two vacant spaces in the case, one for a round porcelain ink pan, the other shaped for some unknown item

50. French[?], fourth quarter 19th-century[?]

Unattributed

Set of brass instruments in a rosewood-veneered case.

Case:

23.8cm (9 $\frac{3}{8}$ ") wide, 15.5cm (5 $\frac{3}{4}$ ") deep, 4cm (1 $\frac{1}{2}$ ") thick; wood (birch?) veneered in rosewood, the top centered with a vacant inset rectangular brass engraving plate and a rectangle of thin brass stringing, the top lined in purple silk, the wood-framed tray lined in purple velvet and fitted [lock lacking].

Contents:

Instruments in brass and steel:

- 6 $\frac{1}{4}$ " compasses with one fixed and one removable divider leg

 - two hinged ink legs for above

 - extension leg for above

- 4 $\frac{1}{2}$ " divider

- 4 $\frac{1}{8}$ " compasses with hinged fixed needle-point divider leg and removable divider leg

 - hinged ink and pencil legs for above

- 3 $\frac{3}{4}$ small-diameter ink-leg compass with ball-finial ivory or bone handle

- 3 $\frac{3}{8}$ " compass with handle and with fixed needle-point divider leg and removable divider leg

 - hinged pencil leg for above

- 4 $\frac{1}{4}$ " ruling pen with fixed blades, brass ferrule, and ball-finial ivory or bone handle

- 5 $\frac{1}{2}$ " ruling pen with fixed blades, brass ferrule, and decoratively-turned ball-finial ebony handle

51. French, fourth quarter, 19th-century

Baraban

Set of silver and ivory drawing instruments in a flat leather-covered wood pocket case.

Case:

17.3cm (6¾") wide, 10cm (3⅞") deep; wallet-type with slide-bar catch, wood covered in tan cross-grain embossed leather gold-stamped C.C., replaced leather hinge; fitted interior lined in dark green silk velvet, with green watered-silk pull-down liner inside lid revealing green-paper lined space with green silk ribbon to hold protractor.

Contents:

Silvered semi-circular protractor, 9cm (3½") diameter, numbered in both directions

Eight instruments in silver, steel, and ivory, with single-leaf hinges

dividers, 13cm (5⅛") long

compasses with handle, with fixed hinged needle-point divider leg and removable hinged pencil leg,

plus hinged ink leg and extension leg

pair of ivory-handle pencil and ink compasses with adjustable points

pair of ivory-handle ruling pens

Signatures:

BARABAN, 175 Rue St HONORÉ PARIS gold-stamped on inside edge of case; *M^{SON} BARABAN, PARENT Succ^r, 175 Rue St Honoré* printed on a small paper label inside the lid; *BARABAN* stamped onto four compasses; C.C. engraved on each piece (except protractor)

52. French, second half 19th-century

Baraban [?]

Double-sized set of drawing instruments of nickel silver, steel, and ivory [probably made for exhibition at an industrial exposition].

Contents:

35cm (13¾") hairspring divider with partly-knurled handle, the fine adjustment set by a doubled-ribbed knurled knob

31.8cm (12½") compasses with partly knurled handle, one fixed hinged leg with reversible and replaceable needle point held in place with small double-ribbed knurled knob, the other leg with removable hinged ink fitting with fixed blades adjusted by a double-ribbed knurled knob, an identical knob holding the fitting in place

31.8cm (12½") compasses with partly knurled handle, one fixed hinged leg with reversible and replaceable needle point held in place with small double-ribbed knurled knob, the other leg with removable hinged pencil-lead fitting adjusted by a double-ribbed knurled knob, an identical knob holding the fitting in place

13.4cm (5¼") extension leg for either of the above compasses

20.5cm (8") small-diameter, spring-bow drop compass with adjustable point, fixed-blade removable ink leg, the circle diameter adjustable by a single-rib knurled knob to a maximum radius of about 3.2cm (1¼") and a minimum radius of hardly more than a millimeter

28cm (11") fixed-blade ruling pen with ball-finial ivory handle, double-ribbed knurled ferrule and double-ribbed knurled adjustment knob

5cm x 2cm x 0.5cm rectangular spanner adjustment tool

53. Italian [?], late 18th-century

Unattributed

Double-cased set of brass instruments.

Cases:

outer case: 22.6cm (8⁷/₈") long, 10.3cm (4¹/₈") wide, 3.2cm (1¹/₄") thick, pasteboard of lift-off telescoping form, covered in brown and red glazed marbled paper.

inner case: 22cm (8⁵/₈") long, 9.5cm (3³/₄") wide, 2.3cm (7/₈") thick, wood covered in green glazed paper, brass swing catches on the two short ends, the interior fitted and lined in chamois-colored velvet.

Contents:

Heavy brass parallel rule 20cm (7⁷/₈") long, with brass buttons and straight brass linkages and opposite bevels on the arms

Brass rule with the same diagonal-divided scale of unknown inches on each side, each side punched with the widely-spaced letters P H F

Brass semi-circular protractor, 8.8cm (3¹/₂") diameter with plain lower limb 9.8cm (3⁷/₈") long, numbered in both directions with punched numbers of similar (identical?) design to those on the rule

Fixed-leg unmarked brass square 16.8cm by 8.2cm, with decoratively shaped ends

Brass dividers with steel points and double-leaf hinge joint

Brass compasses with steel points, double-leaf hinge joint and one fixed and one removable divider leg plus hinged ink and pencil legs; the compasses and ink leg with matching brass elliptical adjustment screws, the pencil leg with non-matching brass hand-cut wing-shaped adjustment screw (early replacement?)

Brass ruling pen with steel blades and brass elliptical adjustment screw (matches others above) with eight-sided reverse-taper handle and turned finial end

Two small boxwood triangles (fitted place in case for one), one rubber-stamped with owner's name, Ludwig Plass.

54. Italian, circa 1833

Carlo Bordogna, Milan

Set of drawing instruments in a gold-stamped leather-covered wood case.

Case:

14.7cm (5¾") long, 7.8cm (3⅛") deep, 2.3cm (7⁄8") high; softwood, covered in orange/brown leather, gold-stamped on top with leaf-decoration border, with brass-escutcheoned lock and two decorative brass hook-catches, integral leather hinge, bottom with early ink-inscribed date of 1833 and with remains of a (?) label printed in Italian; interior lined in green silk velvet.

Contents:

Nine instruments in brass and steel with double hinge leaves:

- compasses 12.5cm (5") long, with one fixed and one removable divider leg

 - hinged pencil leg (an early replacement)

 - hinged ink leg (adjustment screw is an early replacement)

 - extension leg

- compasses (half size of the one above), with one fixed and one removable divider leg

 - hinged pencil leg

 - hinged ink leg

- divider with screw-on protective sheath

- ruling pen with hinged blade, tapered octagonal and round handle, which unscrews to reveal a hidden pin-pricker

[Lacking a small adjustment spanner.]

55. Italian [?], late 18th or early 19th-century

Unattributed

Set of brass drawing instruments in a gold-tooled leather case.

Case:

19cm (7½") wide, 10cm (3⅞") deep, 3cm (1⅛") thick; wood, covered in gold-tooled leather; replaced leather hinge and replaced catches; lined in green silk velvet, top and bottom fully fitted.

Contents:

Brass rule 16.2cm (6⅜") long, with a different diagonal-divided scale on each side (divisions on one side are a little over an inch, those on the other are 1¼") with punched numbers

Brass semi-circular protractor, 9cm (3½") diameter, numbered in both directions with punched numbers of different design of those of the rule

Fixed-leg unmarked brass square 14.8cm by 6.8cm, with decoratively shaped ends

Ebony parallel rule 16.3cm (6½") long with small brass lifting knobs and straight brass linkages, the upper edge grooved to reduce the thickness of the wood

Brass dividers with double-leaf hinge joint and steel points 12.7cm (5") long.

Brass hinged extension leg with hand-cut brass adjustment wing screw (for compasses with interchangeable legs [now lacking]).

Apparently non-original small brass and steel compasses for interchangeable legs (none present), with double steel hinge leaves, urn-shaped finial handle, stamped with owners name stoliberg on one side and 18 m 21 (the 1 double punched over an 0).

Steel and brass ruling pen with hinged blade and hand-cut steel wing adjustment screw, and with turned horn or bone handle that screws into the brass ferrule of the pen

Fixed-leg proportional dividers set to 4:1 ratio

[The square is held in the top of the case by the brass rule, which is held in place by the protractor, which in turn is held in place by the parallel rule, which itself is secured with a swiveling brass arm.]

56. Dutch, 19th-century

Unattributed

Part set of bulbous-octagonal-head brass instruments in a figured mahogany case.

Case:

17.8cm (7") wide, 13.8cm (5³/₈") deep, 3.8cm (1¹/₂") high; mahogany with figured mahogany veneer, the front with a shield-shaped mother-of-pearl keyhole escutcheon, the interior of the top with padded green silk over a card, which opens to reveal a green-paper lined storage compartment with retaining divider to hold perhaps a protractor and a triangle, the bottom lined in green velvet, the imitation red-leather trimmed tray fitted and lined in green velvet.

Contents:

Four instruments in brass and steel, each with double-leaf jointed bulbous hexagonal head:

5¹/₄" fixed-leg divider

5¹/₄" compasses with one fixed and one removable divider point

5¹/₄" compasses with one fixed divider leg and one removable hinged divider leg

3¹/₄" compasses with one fixed divider leg and one hinged leg with place for removable leg fitting

[Lacking from their vacant places in the tray are apparently: large ink, pencil, and extension legs; small ink, pencil, and divider legs; two ruling pens.]

57. Swiss, circa 1900

Kern & Company

Set of draftsman's instruments of nickel silver, steel, and ivory, in a walnut case.

Case:

26.8cm (10½") wide, 16cm (6¼") deep, 6.8cm (2⅝") high; walnut with splined corners and with pine bottom, inside of top lined in padded plum cotton velvet, walnut tray fitted and lined in plum velvet, decorative paper on the underside of the tray and on the bottom of the inside; unmarked brass lock, no key.

Contents:

6¼" compasses with two removable divider legs

extension leg and hinged ink, pencil, and needle-point divider legs for above

4½" hairspring divider

Small spring-loaded compass with handle and with hinged pencil leg [lacking ink leg].

Proportional divider with fine-movement adjustment arm and with scales for *LINES* and *CIRCLES*, the words stamped and the numbers hand engraved.

Large double border ruling pen with ivory handle

Adjustable railroad pen with ivory handle and with hinged blades and hinged pen points

Four ivory handled ruling pens (one free in the bottom of the case)

Steel spanner adjustment tool

Ten brass thumb tacks (plus one steel tack) on a decoratively-scored piece of wood

Wood pen-point holder with points at both ends, one stamped *PLUME LILLIPUT BLANZY POURÉ & C^{IE}*, the other stamped *JOSEPH GILLOTT'S SUPERFINE LONG SHOULDER CROW QUILL*

Signature:

KERN & CO ARRAU SWISS on the handle of the extra ruling pen loose in the bottom of the case.

58. Swiss, circa 1900

Kern & Co.

Set of drawing instruments in characteristic Swiss style.

Case:

27.8cm (11") long, 14cm (5½") deep, 3.7cm (1½") high; wood, covered in seed-textured green leather, decoratively gold-tooled, with two large cut-metal swivel catches, lock with large rectangular nickel silver keyhole escutcheon, the bottom covered in green paper, the interior fully fitted and lined in purple velvet, with an extra slot for accessories or pencils.

Contents:

Bone rule 16.4cm (6½") long, with four diagonal-divided scales of 200, 250, 500, and 1000 parts per meter

Ebony straight-edge 24.2cm (9½") long

Ebony 22-degree triangle 13.9cm (5½") long

Nickel silver semi-circular protractor 4.5cm (5¾") diameter with horn center and extension arm (stamped 14 on the back), divided in both directions to half degrees and with a vernier readout

16 instruments in nickel silver with steel points, plus four additional items:

 hairspring divider with handle

 large compasses with both legs removable

 divider leg, needle-point divider leg, pencil leg, ink leg, dotting-wheel ink leg, all hinged, plus extension leg

 medium compasses with handle and both legs removable

 two divider legs, needle-point divider leg, pencil leg, ink leg, all hinged

 small spring swivel compass with handle and interchangeable hinged pencil and ink legs

 two horn centers

 handled three-pin pricker

 small combination screwdriver and spanner

Signatures:

Owner's initials *A.B.E.* gold-stamped and centered on the top, and *I. KERN À AARAU EN SUISSE* gold-stamped at lower left on the top.

Series V: American Sets

59. American, fourth quarter 19th-century

Keuffel & Esser

Cased set of instruments.

Case:

31.5cm (12³/₈") wide, 21.2cm (8³/₈") deep, 7.7cm (3") high; walnut, the top centered with a plated metal shield elegantly engraved with a flourished monogram *SVH*, the lock removed (inset keyhole bushing present), the top lined in padded deep purple velvet and opening to reveal a velvet-lined compartment for the protractors, the removable tray with leather lifting tabs fitted and lined in purple velvet.

Contents:

Instruments in nickel silver, some with ivory handles:

- 5³/₄" compasses with two removable straight divider legs
- hinged ink, pencil, and needle-point divider legs plus extension leg, all for above
- 5¹/₈" hairspring divider
- 4⁷/₈" hairspring divider
- 4¹/₈" compasses with handle and two removable straight divider legs
- hinged ink, pencil, and needle-point divider legs for above
- three 3¹/₄" side-wheel spring-bow compasses with smooth turned ivory handles
- three 3¹/₈" side-wheel spring-bow compasses with smooth turned ivory handles
- three hinged-blade ruling pens with ivory handles
- large railroad ruling pen with ivory handle with ball finial end

English proportional divider with toothed rack adjustment, and scales identified with hand-engraved titles as *Lines*, *Plans*, and *Circles*

Screw-top cylindrical metal case for spare leads and needles

Adjustment tool

Small three-point horn center (for use with compasses)

6" brass semi-circular protractor stamped with numbers in both directions and divided to half degrees

6" horn protractor (cracked) with hand-engraved numbers in both directions and divided to half degrees

Three black hard rubber triangular lettering guides

Two black hard rubber drawing triangles

Nine black hard rubber French curves plus one pearwood French curve stamped AX
Trademark 1872

Advertising card for a Draughtsmans' Adjustable Curve Ruler Patented May 20, 1884, cut to
form two 40° triangles (and so marked)

Three boxes of pencil leads: one marked *A.W. Farber Siberian Leads*, one marked *Eagle Artist
Leads for Automatic Pencils*, one unmarked

Two cork cards of thumb tacks (for holding down drawing sheets)

Signatures:

KEUFFEL & ESSER CO. NEW-YORK stamped on a small polished metal plaque affixed to the tray;
STANLEY LONDON stamped on the brass protractor; *Stanley Gt. Turnstile W.C.* hand engraved on
the proportional divider; *KEUFFEL & ESSER NY* stamped on most of the other instruments.

Series VI: 20th-century Sets

60. American, circa 1913

Keuffel & Esser

Set of Paragon nickel silver and steel drawing instruments.

Case:

36.6cm (14½") wide, 21.5cm (8½") deep, 8.3cm (3¼") high; stained pine; the lid lined in maroon cotton velvet; with original mahogany tray fitted and lined in green silk velvet.

Contents:

6½" compasses with handle and with interchangeable legs, provided with two straight divider legs, two hinged pencil legs, and a straight extension leg

5½" hairspring divider

Pair of 4" compasses with hinged ink and pencil legs

Trio of side-wheel spring bows with ink, pencil, and divider legs

Tubular beam compass with extension (total assembled length overall 18½"), with support attachment with ivory wheels (in base of case), and with two trammels points, needle-point leg, ink and pencil legs

10" proportional divider with toothed rack movement and a single scale divided from 10 to 110

3 ruling pens with fixed blades and ebony handle

Railroad ruling pen with side-wheel adjustment, hinged legs, and ivory handle

Screw-top cylindrical case for spare leads and needle points

Single large thumb tack

6" clear Xylonite (yellow celluloid) semi-circular protractor numbered in both directions and divided to half-degrees, No. 1276-6 [old No. 1868-6] with original green glazed paper envelope; found with set but of later date.

Signatures:

A white celluloid plate on the tray reading KEUFFEL & ESSER CO. NEW YORK ST LOUIS CHICAGO SAN FRANCISCO; the instruments stamped KEUFFEL & ESSER CO. NY PARAGON MARCH 14 & 28 93 GERMANY and variations.

61. Keuffel & Esser

Set of drawing instruments in a folding case.

Case:

25cm (9¾") wide, 9.5cm (3⅞") deep. 2cm (¾") thick; wood with four paste-board flaps with one press-snap, covered in thin black leather, lined in green silk velvet, and fitted.

Contents:

6¼" compasses with handle and with hinged fixed leg with replaceable needle-point and replaceable hinged pencil leg [lacking integral centering device for handle]

Hinged ink leg and extension leg for above

5¾" divider with replaceable needle-points

Pair of side-wheel ink and divider spring bows

Ruling pen with fixed blades and aluminum handle

Ruling pen with fixed blades and ebony handle stamped "paragon" and "germany"
[replacement for lacking original]

Screw-top cylindrical container for spare parts

Signatures:

KEUFFEL & ESSER CO. N.Y. gold stamped inside the top flap and stamped on the snap fastener; *K & E CO. MADE IN U.S.A.* and an anchor logo on the instruments.

62. German, first half 20th-century

E.O. Richter & Co.

Custom-fitted case of instruments, probably for an engineer.

Case:

57.3cm (22⁵/₈") wide, 38.5cm (15¹/₈") deep, 16cm (6¹/₄") high; walnut with figured walnut veneer; two front corners curved to 1¹/₂" radius; lid with two nickel-plated spring catches, lifting on two nickel-plated hinges with separate 90° opening limiters, lined in padded purple silk, revealing a purple velvet lined and fitted interior shelf with small rectangular well with lift-off cover; the front of the case with a pair of doors with 1¹/₂" radius corners and lock with nickel-plated keyhole escutcheon, the doors hinged at the rear of the front corners, each door purple felt lined and fitted with four felt-lined wells precisely sized for Higgins ink bottles; the doors swinging outward to reveal a single large drawer with two nickel-plated pull-knobs, partially fitted and lined in purple felt.

Contents:

11¹/₂" wood slide rule with ivoroid faces, with unusual scales plus scales of inches and centimeters, aluminum-framed triple-lined slide-viewer, and paper conversion chart for French and English units (printed in French) on back

9³/₄" ebony section liner with thumb-activated advance mechanism

8" steel inside/outside calipers with scales and conversion tables marked in German

8" nickel-plated proportional dividers with turned-down points, rack-adjustment, and German-marked scales for lines and circles.

6¹/₂" tubular pencil compasses with handle and hinged legs

Two 6¹/₂" compasses with handles and with interchangeable divider, ink, and pencil-lead hinged legs plus extension leg

Two 5⁷/₈" fixed-leg dividers with handles

two 4¹/₂" compasses with handles and with interchangeable divider, ink, and pencil-lead hinged legs

4" fixed-leg divider with handle

Two drop compasses with interchangeable ink and pencil-lead legs (one Richter, one not)

Pair of 4" ink and pencil-lead center-wheel bow compasses

Pair of 3³/₄" ink and pencil-lead center-wheel bow compasses of different design

Single 3³/₄" replaceable-needle center-wheel bow divider of different design

Ten ruling pens of different types and handles

Dotting pen with four additional brass wheels

Dotting tool with two additional wheels

Metal pin-pricker with removable handle

Double-ended ink/pencil-lead tool

Mechanical pencil stamped 20201, 4h, and instructions "first loosen cap then adjust"

Knurled metal handle for compass legs, with top unscrewing as container for spare needle points

Black plastic handle for compass legs, with top unscrewing as container for spare needle points

Black ribbed plastic container for spare leads

Cylindrical metal container for spare needle points

Spare parts in small well with lift-off cover

Black handled screw driver (tip defective), with top unscrewing as container for spare needle points

Small black-handled Coddington magnifier

Fittings for a beam compass, with beam (with engraved scale divided in millimeters) in fitted compartment in lower drawer

Signatures:

E.O. Richter & Co., Richter, or the distinctive *EOR* monogram on many pieces; *RIEFLER* on the tubular compasses; *MAUSER* on the calipers; "*LETTO-DRAUGHTSMAN*" and *FOREIGN* on the mechanical pencil; *WIG 39* (owner's initials and the year?) on the proportional compasses.

63. German, first third 20th-century

E.O. Richter & Co.

Set of drafting instruments in replicated outer case.

Case:

48cm (18⁷/₈") wide, 32.8cm (12⁷/₈") deep, 5.3cm (2") thick; walnut replicating the original, with mitred and splined corners and original brass swing catches; the lid lined in the original black velvet, the base with its original black velvet lined fitted interior with inset honing strop for pen blades.

Contents:

7½" compasses with interchangeable hinged legs and with quarter-circle device for locking in position

6" compasses with interchangeable hinged legs

pencil-lead, ink, and double-thick ink legs for the above

6" dividers

6" hairspring dividers

4" dividers

4" compasses with interchangeable hinged legs

Drop compass with interchangeable leg

Pencil-lead and extra ink legs for the above

4" center-wheel spring-bow divider

4" center-wheel spring-bow compass with interchangeable ink and pencil-lead legs (replacement)

4" dividers with slide-off protective sheath engraved with scale of millimeters

Two knurled metal handles with screw-top revealing place for spare needle-points

Knurled metal-handled screw driver with screw-top revealing place for spare needle-points

Rolling measure marker with three wheels

Small pencil-lead holder with ribbed handle

Two cylindrical metal cases for spare leads

Small cylindrical metal case for spare needle-points

Dotting pen device with three wheels (empty spaces for nine more)

Proportional divider with scales for lines and circles and with a movable pin for fixing the divider at particular proportions

9³/₄" ebony section liner with thumb-activated advance mechanism

Beam compass with reversible pen/pencil leg and dotting-pen attachment [lacking divider-leg]

Signatures:

Präcision, E.O. Richter & Co., D.P., and the distinctive *EOR* monogram, all gold-stamped on the lining of the lid; *Richter* and the Richter monogram on most of the instruments.

64. German, circa 1900[?]

Set of unsigned nickel silver drawing instruments in mahogany case.

Case:

35cm (13¾") long, 17cm (6¾") deep, 11.4 cm (4½") high; mahogany with mitered and splined corners, with vacant brass elliptical engraving plate to the top, unmarked lock, the top lined in purple silk velvet, with a catch and cord-pull, giving access to a compartment lined in blue paper overall-printed with small gold stars (the inside of the case lined in the same paper), a lift-out tray lined in the same purple velvet fitted for the instruments and with a small well for leads and spare parts with a lift-off cover with small ivory knob. The bottom of the tray is covered in a different paper; the bottom of the case is softwood.

Contents:

Instruments in nickel silver, steel, and ivory, with single-leaf hinge joints

compasses, 15cm (6") long, with two removable divider legs, with extension leg and with hinged pencil, ink, and needle-point divider legs

hairspring dividers

small ink compass with hinged legs and handle (stamped *PATENT 1850*)

small spring bow divider with integral seven-sided handle and knurled finial end

pair of proportional dividers with geared rack adjustment mechanism and scales stamped *LINES* and *CIRCLES*

pair of beam-compass fittings, one with threaded fine adjustment, with pencil, ink, needle-point, and divider legs

3 ivory-handled ruling pens

Small adjustment spanner tool

Celluloid protractor with divisions to half-degrees, numbers hand-engraved in both directions

Thin pearwood French curve

65. German, first quarter 20th-century

E.O. Richter & Co.

Set of drawing instruments in portable case.

Case:

25cm (9⁷/₈") wide, 11cm (4³/₈") deep, 2.5cm (1") thick; cushion-shaped wallet-type wood case covered in black leather-grain fabrikoid, with one sliding-rod catch, the interior covered in dark green velvet and fitted.

Contents:

6¹/₄" compasses with handle and with reversible needle-point fixed leg and hinged leg with replaceable divider fitting ink, pencil, and extension fittings for above

Matching hairspring divider with replaceable needle points

Trio of side-wheel ink, pencil, and needle-point divider spring bows

Two fixed-blade ruling pens with black-enameled metal handles

Metal knurled handle for compass legs with integral screw-top container for extra needle points

Metal black-handled screw driver with integral screw-top container for extra leads

Signatures:

Präcision E.O. RICHTER & CO. D.P. and the Richter *EOR* logo, blind-stamped on the top; *RICHTER* and the Richter logo on the instruments.

66. German, imported by Keuffel & Esser circa 1900

Set of nickel silver instruments in a folding case.

Case:

22cm (8 $\frac{5}{8}$ ") wide, 8.5cm (3 $\frac{5}{8}$ ") deep, 1.8cm (3 $\frac{3}{4}$ ") thick; wood with four pasteboard flaps and press-snap, covered in black fabrikoid, lined in purple cotton velvet and fitted.

Contents:

6" compasses with handle and with fixed hinged needle-point leg and replaceable hinged pencil leg

[Lacking extension and pencil legs for above]

5 $\frac{1}{2}$ " divider with handle

67. German, first quarter, 20th-century

Set of instruments made post-1905

Case:

27.2cm (10 $\frac{3}{4}$ ") wide, 11cm (4 $\frac{3}{8}$ ") deep, 2.5cm (1") thick; cushion-shaped wallet-type wood case covered in textured and scored black paper, with two sliding-rod catches, the interior covered in black velvet and fitted.

Contents:

6 $\frac{1}{4}$ " compasses with handle and with reversible needle-point fixed leg and hinged leg with replaceable needle-point divider fitting

Ink, pencil, and extension fittings for above

5 $\frac{1}{2}$ " divider with handle and with replaceable needle-points

4" compasses with handle and with reversible needle-point fixed leg and hinged leg, with replaceable needle-point divider fitting

Two ink fittings (one with swiveling blade for cleaning) and pencil fitting for above

Drop compass with replaceable ink fitting

Pencil fitting for above

Small ebony-handled ruling pen with swiveling blade

Knurled-handled screw driver

Three knurled handles for the compass legs

Small pull-off top metal cylinder for spare needles and leads

68. German, first half 20th-century

E. Boden

Set of plated steel instruments in the style of the Richter flat-system design.

Case:

24.3cm (9⁵/₈") wide, 12.3cm (4⁷/₈") deep, 2cm (3¹/₄") thick; double flap case of wood and two pasteboard flaps covered in textured black paper with two press-snaps, lined in blue velvet and fitted.

Contents:

5" compasses with handle and with reversible needle-point fixed leg and hinged leg
with replaceable divider fitting
ink, pencil, and jointed extension fittings for above

Matching replaceable-needle divider

Trio of ink, pencil, and replaceable-needle divider spring bows

Two fixed-blade ruling pens with removable aluminum handles

Screw driver with ribbed metal handle

Large pull-top cylindrical metal case for spare leads

Small pull-top cylindrical metal case for spare needles

Signature:

E.BODEN GERMANY stamped on the five main pieces

69. English, mid 20th-century

Lee Guinness

Set of nickel silver and steel instruments in a zippered leather case.

Case:

26.5cm (10³/₈") wide, 13.5cm (5³/₈") deep, 2.4cm (1") thick; black leather, with zipper closure on three sides, with inner leather covered flap held in place with two leather snap-close flaps, the interior fitted and lined in moss green cotton velvet.

Contents:

6¹/₄" compasses of tubular form with handle and two removable hinged needle-point divider legs

extension leg and hinged ink and pencil legs for above

Trio of ink, pencil, and divider-leg center-wheel spring bow compasses

Black-plastic-handled ruling pen with numbered adjustment wheel and swing-out blade to permit cleaning the blades without changing the line-width adjustment

Adjustment tool

Signature:

LEE GUINNESS ENGLAND stamped on four of the items

70. (?) American, (?) 1940s

Incomplete set of instruments made in imitation of German prototypes.

Case:

22cm (8⁵/₈") wide, 10.6cm (4¹/₈") deep, 2.5cm (1") thick; cushion-shaped wallet-type wood case covered in textured and scored black paper, with two sliding-rod catches, the interior covered in black velvet and fitted.

Contents:

5¹/₄" friction-fit replaceable-needle dividers with handle

Side-wheel spring bow divider

Drop compass

Two black-painted wood-handled ruling pens with fixed blades

Black-painted knurled aluminum handle

Two pull-top metal cylinders for spare needles and leads

Ink leg for compass [Lacking adjustment wheel]

Jointed extension leg for compass

[Lacking: 5¹/₄" compass and its pencil and divider legs, ink and pencil fittings for the drop compass.]

71. Italian, fourth quarter 20th-century

Charvoz

Set of draftsman's instruments

Case:

25.4cm (10") wide, 13.5cm (5¼") deep, 2.5cm (1") thick; textured grey plastic with two sliding black plastic catches, the interior of the top lined in sponge-backed black fabric, the bottom with a black-flocked shaped plastic insert fitted for the instruments.

Contents:

6¼" compasses with handle and black plastic joint cover with fixed reversible needle-point leg and hinged removable pencil leg
ink leg and hinged extension leg for above

6¼" replaceable needle-point divider

Trio of center-wheel ink, pencil, and divider spring bows

Two ruling pens with fixed blades

Small clear-plastic cylindrical case for spare leads

Small clear-plastic rectangular case for spare needles and adjustment wheels

Screw driver

Signatures:

charvoz ITALY and the Charvoz logo on the instruments; *charvoz ITALY 10-5383* and the Charvoz logo gold-stamped on a black plastic label on the case

72. Russian, fourth quarter 20th-century

School-child's drawing instrument set in a molded plastic case.

Case:

21.5cm (8½") wide, 10cm (4") deep, 1.9cm (¾") thick; ribbed black molded plastic case with two sliding black plastic catches, the interior of the lid lined in sponge rubber, the bottom with a translucent shaped plastic insert fitted for the instruments.

Contents:

6" plated metal compasses with self-centering handle and with replaceable needle-point in fixed leg and removable pencil fitting in hinged leg

Matching divider with replaceable needle-points

Yellow plastic press-clutch mechanical pencil of triangular section

Grey plastic sliding-cover case for pencil leads

Rubber eraser

Black plastic cylindrical case for spare needles

Metal center tack

Spare adjustment wheel

Small flat metal screw driver

Signatures:

The pencil signed *KUMEK* as a stylized logo with LQ30K within a lozenge; the case marked H4-8-2-07; a small paper sheet printed in Russian and stamped with the price (11 rubles and 0 kopeks) rubber stamped on it, is included within the case.

73. French, fourth quarter 20th-century

Maped

Student's compass set in a plastic case.

Case:

6cm x 5.5cm x 1.9cm (6³/₈" x 2¹/₄" x ³/₄"); clear plastic lift-off top over olive-colored plastic base with light olive thin plastic insert fitted for the instruments.

Contents:

5¹/₂" compasses in frosted-finish metal with black plastic handle and joint cover,
and with replaceable needle point in fixed leg and hinged leg with pencil-lead fitting
ink fitting for above

Plastic handle for either compass fitting

Small clear-plastic case for spare leads and needles

Signatures:

MAPED ANNECY FRANCE and a logo on an M in a quartered circle in frosted letters on the case top; *MAPED 308 BN* and the logo on a paper label on the base; *MAPED* on the joint cover of the compasses.

74. French, fourth quarter 20th-century

Maped

Self-contained dual-compass set in a plastic carry case.

Case:

19cm x 9.8cm x 2.6cm (7½" x 3⅞" x 1") with rounded corners, battered sides, and a cut-out at one end for hanging on a merchandising display; clear plastic top snapping onto black plastic base, with gray plastic insert fitted for the instruments.

Contents:

5¾" black plastic and plated metal compasses with black plastic self-centering handle and red plastic knurled knobs and with hinged removable needle-point and pencil-lead legs
alternative extension needle-point leg for above
alternative automatic-feed micro-lead leg for above
fitting for screw-in alternative leg not present here

4¼" small-diameter compasses with fixed replaceable-needle-point leg and removable pencil-lead leg

Small clear-plastic rectangular case for spare leads and needles

Adjustment tool

Signatures:

MAPED made in France Patent pending on the bottom of the case; *MAPED* in raised white letters on the two compasses.

75. French, fourth quarter 20th-century

Maped

Three student sets of instruments finished in colored enamels.

Each case:

16cm x 6.3cm x 1.8cm (6¼" x 2½" x ¾"); clear plastic top hinged to white or light gray bottom, with two sliding black plastic catches and a clear plastic insert formed to hold the instruments.

Contents of each set:

4¾ compasses with removable pencil-lead fitting
ink fitting for above

3⅞" spring-bow compasses with swiveling reversible ink/pencil leg

Black plastic handle for compass fittings

Ruling pen with fixed blades and black plastic handle

Small black plastic rectangular container for spare leads

Small black metal adjustment screw driver

Each set's compasses are enameled; the bottom card is colored:

red-orange instruments with purple card and gray case bottom

blue instruments with rose-red card and gray case bottom

yellow instruments with brown card and white case bottom

Signatures:

MAPED FRANCE on the large compasses; *MAPED ANNECEY-FRANCE* on the colored cards.

Series VII: Scales and Rules

76. English, circa 1855

William Elliott & Sons

Folding ivory rule with architects scales and nickel silver mountings.

Instrument:

An ivory four-fold two-foot rule (six inches long when closed) with nickel silver arch joint, hinges, and end bandings, and with four chamfered inner-edge architectural scales, well used, with rust stains [lacking its two alignment pins].

Signature:

W.ELLIOTT & SONS 56 STRAND LONDON stamped on the edge of the rule, an early (original?) owner's name J.JEFFKINS stamped on one face

77. English, 19th-century

Farmer & Sons Kensington

Set of a Marquois scales and triangle.

Case:

Mahogany, with sliding lid, assembled with four brass screws, 33.5cm (13¼") long, 13cm (5⅛") wide, 2cm (¾") thick.

Contents:

A set of two boxwood Marquois scales (each 31.5cm (12⅜") long with four scales) and triangle.

Signatures:

FARMER & SONS KENSINGTON on the scales; *F. A. Kinolake Foster* scratched into the lid; *F.A.K.F. 3rd Bedfordshire Regiment* written in script in ink on the bottom of the case.

78. English, late 19th-century

Elliott Brothers

Set of boxwood technical rules in mahogany case.

Case:

51.5cm (20¼") long, 19cm (7½") deep, 6.5cm (2⅝") thick; assembled with countersunk brass screws, the top with shaped in-set rectangular brass plate machine-engraved with owner's name *G. BURT*; the lock stamped *SECURE LEVER* and a diamond shape centering a log reading *T-T & CO* with *W* beneath, with a circular nickel silver keyhole escutcheon to the front; the interior lined in purple velvet, fitted with slots for the rules, with boxwood strips at each side stamped with the identity of the scale in each slot.

Contents:

Fifteen 18-inch rules and fifteen 4-inch offset rules, engine-divided into various architects', engineers', and surveyors' scales. One long scale warped, one long scale chipped, one long scale split and chipped.

Signature:

ELLIOTT BROS LONDON, plus *ENGINE DIVIDED*, stamped on each rule front and the owner's name *G. BURT* stamped on each rule back

79. English, fourth quarter 19th-century

William Ford Stanley

Set of boxwood engineers' 12" scales and 2" offsets in mahogany case.

Case:

34 cm (13³/₈") long, 8 cm (3¹/₈") deep, 4.6 cm (1⁷/₈") thick; mahogany, machine-dovetailed corners, the top and bottom secured with brass pins, two shaped brass swinging catches and a vacant elliptical brass engraving plate set into lid; the interior of the lid lined in padded blue silk; the bottom fitted and unlined.

Contents:

Complete set of boxwood engineers' rules, comprising ten 12-inch scales and ten 2-inch offsets, all open-divided and numbered in both directions. In use, the long rules would be used for setting off horizontal and long vertical distances, while the offsets (which have square ends and are fully divided to each end) would be placed vertically against a straight-edge or a t-square to set off short vertical distances.

Signature:

STANLEY GREAT TURNSTILE HOLBORN, LONDON within a decorative ribbon cartouche gold-stamped onto the silk lining of the lid; *STANLEY LONDON TRADE MARK* stamped on each rule.

80. English, fourth quarter 19th-century

Unsigned set of boxwood engineers' 12" scales and 2" offsets in mahogany case.

Case:

34.5 cm (13¹/₂") long; mahogany, machine-dovetailed corners, the top and bottom secured with brass pins, two shaped brass swinging catches and a vacant square brass engraving plate incompletely set into lid; the interior of the lid lined in padded blue silk; the bottom fitted and unlined.

Contents:

Six 12-inch rules and five 2-inch offsets, all engineers' scales, all boxwood, some of the long rules slightly warped. "ENGINE DIVIDED" stamped on the long rules.

81. American, first third 20th-century

Eugene Dietzgen & Co.

Set of eight 12-inch boxwood architects' scales in a mahogany case.

Case:

36 cm (14 $\frac{1}{8}$ ") long, 9.8 cm (3 $\frac{7}{8}$ ") deep, 4.7 cm (1 $\frac{7}{8}$ ") thick; mahogany, machine-dovetailed corners, two shaped brass swinging catches; the interior of both top and bottom with two cushioning strips of green felt glued in, the bottom fitted, with the scale identifications stamped at the retaining slots at one end.

Contents:

Complete set of eight 12-inch boxwood architects' scales, two slightly warped, four with small chips.

Signatures:

DIETZGEN U.S. ST'D stamped on each scale; *DIETZGEN TRADE MARK CHICAGO NEW YORK SAN FRANCISCO NEW ORLEANS PITTSBURG PHILADELPHIA WASHINGTON* in raised letters and with a trade mark device on a black enameled background on a small rectangular brass plate affixed with two small escutcheon pins to the front of the lid.

82. English, 19th-century (circa 1841 – circa 1895)

Collection of fifteen 12-inch and six 2-inch ivory scales contained in an unfitted mahogany case.

Case:

34 cm (13 $\frac{3}{8}$ ") long, 5.5 cm (2 $\frac{1}{8}$ ") deep, 4 cm (1 $\frac{5}{8}$ ") thick; mahogany, splined mitred corners, top and bottom secured with small brass screws, the top with vacant brass-plated shaped rectangular engraving plate, the lock with similarly-shaped square escutcheon (no key), the top lined in padded dark blue cotton velvet, the bottom interior unfinished.

Contents:

Collection of fifteen 12-inch scales and six 2-inch offset scales, all in ivory; all one-sided engineers' scales open-divided and numbered in both directions except as noted; four scales with drilled holes, five scales with chips, three scales with stains, three scales with greater wear than the others:

- two 12-inch scales ink-signed *W.I. Mather*

 - one stamped *ADIE. OPTICIAN & C. 1 CONDUIT ST REGENT ST LONDON*

 - one stamped *G. CARTWRIGHT & SON PRESTON*

- six other 12-inch scales and one 2-inch offset stamped *G. CARTWRIGHT & SON PRESTON*

- two 2-inch offsets stamped *G. CARTWRIGHT & SON*

- one 2-inch offset stamped *UNDERHILL MAKER OLD MILLGATE MANCHESTER* and stamped with owner's initials *H.D.W.*

- one 2-inch offset stamped *A. ABRAHAM & CO LIVERPOOL*

- one 12-inch scale stamped *ARCHBUTT*

- one 12-inch scale with a single engineers' scale on both edges numbered in both directions on front and eight architects' scales on the back, stamped *ABRAHAM. LIVERPOOL.*

- one 12-inch scale with two engineers' scales numbered in both directions on the front and the back divided in inches and halves, the ends diagonal divided to read to tenths of the units stamped on the front *J. RONCHETTI OPTICIAN. MANCHESTER.*

- one 12-inch scale with four architects' scales on the front, stamped *J. HALDEN & CO LTD.* and with three surveyors' or map-makers' scales on the back stamped (different letter style) *R. MATHER.*

- one 12-inch scale (very worn) with six architects' scales, stamped *A.G. THORNTON & CO MANCHESTER*

- two 12-inch scales and one 2-inch offset without indication of maker

Signatures:

Five of the scales have been signed by hand with their owners' names; two similarly signed in script in faded ink reading *W. I. Mather*, one in large script in smudged ink reading *R. B. Mather*; another scratched into the ivory reading *R.B. Mather 34 Birley St Bpool*, both on the front; and the

third on the back in carefully inked letters reading *R.B. MATHER. ARCHITECT + C. 34 BIRLEY ST. BLACKPOOL*. A sixth scale is stamped *R. MATHER*.

83. English, 20th-century

Eyre & Spottiswoode (Publishers) Ltd.

Set of cardboard surveyors' scales in cardboard case.

Case:

33.2cm (13 $\frac{1}{8}$ ") long, 3.6cm (1 $\frac{3}{8}$ ") wide, 1cm ($\frac{3}{8}$ ") thick; cardboard covered in green glazed paper.

Contents:

Eight printed surveyors' scales (seven (of nine) plus one additional) of ivory-colored glazed paper-surfaced cardboard, 31.9cm (12 $\frac{1}{2}$ ") long, the additional one with two hand-drawn scales on the verso.

Signature:

EYRE & SPOTTISWOODE (PUBLISHERS) LTD., LONDON on one scale; *EYRE & SPOTTISWOODE (BIBLE WAREHOUSE) LTD., LONDON* on the others

Label:

Pasted onto the case is a paper label, which lists the nine original scales, which provides a space for inserting "Supplied by" and "Student's Name," and which reads: *EYRE & SPOTTISWOODE (Publishers) Ltd. No. 157-2V SURVEYOR'S SET OF 9 CARDBOARD SCALES*

84. English, fourth quarter 19th-century

A. G. Thornton

Brass rolling parallel rule, in mahogany case.

Case:

33 cm (13") wide, 7.6cm (3") deep, 4 cm (1½") thick; mahogany with two brass hinges and two brass swing catches, machine-dovetailed corners, bottom secured with small brass screws; three green baize-lined support strips in inside bottom with later leather strip, the case interior unlined and unfinished, with maker's enameled brass identification plaque affixed to the interior of the lid.

Instrument:

Heavy (26.9 ounces) brass rolling ruler 31 cm (12¼") long, with grooved brass rollers and knurled brass lifting knobs; unlacquered polished finish (may have originally had an oxidized finish).

Signatures:

A.G. Thornton. Manchester hand engraved in an elegant script on the instrument;

A.G.THORNTON MANUFACTURER MANCHESTER in raised block letters within a border on a rectangular brass plate with cut corners, the background enameled black, set with pins onto the inside of the case lid

85. American, circa 1900

Keuffel & Esser

12-inch ebony, mahogany, and brass rolling parallel rule.

Case:

32.5cm (12³/₄") long, 7.1cm (2³/₄") deep, 4.8cm (1⁷/₈") high; unfinished pine, with machine-dovetailed corners and sliding top with cut-out finger grip.

Instrument:

A 12-inch long ebony rolling parallel rule with beveled edges and a brass rolling mechanism protected by an elegantly shaped mahogany top bar with finger recesses.

Signatures:

The top stamped *ONE ROLLING PARALLEL RULE. NO. [1766 written in pen] MANUFACTURED BY KEUFFEL & ESSER CO. N.Y.*; the instrument with KEUFFEL & ESSER N.Y. stamped in a small circle at the left and the K&E wyvern logo and trade-mark stamped at the right and the number 1766 stamped in the center.

86. English, late 18th-century to early 19th-century

Dolland

Rectangular ivory protractor/scale for an engineer.

Instrument:

6" x 1⁵/₈" rectangular ivory protractor numbered in both directions and divided to whole degrees, with a scale of chords on the recto, and six engineer's scales plus a double-diagonal-divided scale readable to 0.0025 inches on the verso.

Signature:

* *DOLLOND* * *LONDON* * punched onto the face.

87. English, late 19th-century

Rectangular boxwood protractor/scale for an architect.

Instrument:

6" x 1 $\frac{5}{8}$ " rectangular boxwood protractor numbered in both directions and divided in whole degrees, with four architect's scales, a scale of chords, and a scale of inches divided to tenths on the recto, and a scale of inches divided to eighths, a scale of centimetres [sic], and a double-diagonal-divided scale readable to 0.005 inches on the verso.

88. English, late 19th or early 20th-century

Elliott Bros.

Rectangular boxwood protractor/scale for a surveyor.

Instrument:

6" x 2" rectangular boxwood protractor divided to single degrees and numbered clockwise from 0° to 180° and from 180° to 360°, and a scale in yards, where 6 inches = one mile, and a scale of inches divided to fifths on the front; and two specialized scales on the back: the one identified as *SCALE OF SHADE FOR SLOPE GIVEN WITH APPROX^{TE} GRADIENTS*, the other identified as *HORIZONT^L EQUIVL^{TS} FOR 12 5 FT CONTOURS AT 12 IN^S = 1 MILE {AT 6 IN^S = 1 MILE DOUBLE THE YD^S FOR 25 FT CONTOURS 2 CONTOURS BRACKETED ARE SHOWN FOR EACH ANGLE DOWN TO 3 °*.

Signature:

ELLIOTT BRO^S LONDON stamped onto the middle of the face.

89. English, 1917

Aston & Mander

Rectangular boxwood-colored plastic (sometimes called French ivory) protractor/scale for a surveyor or map maker.

Item:

6" x 2" plastic rule colored to resemble boxwood, and dense on both sides with various scales and equivalents of use to a surveyor or map maker.

On the recto:

a protractor graduated in single degrees and numbered from 0° to 180° and from 180° to 360°
three scales of 1/80,000 (1 inch = 1.261 miles) graduated in kilometres, miles and yards
three scales of 1/100,000 (1 inch = 1.58 miles) graduated in kilometres, miles and yards
three scales of 1/250,000 (1 inch = 3.94 miles) graduated in kilometres, miles and yards
a scale in yards where 2 inches = 1 mile

On the verso:

three scales of 1/20,000 (1 inch = .3156 miles) graduated in metres, yards and miles
three scales of 1/10,000 (1 inch = .158 miles) graduated in metres, yards and miles
a scale in yards where 1 inch = 1 mile
a scale in yards where ½" = 1 mile
a scale of centimetres
a scale of inches with one end diagonal-divided to read to 0.01 inch
a corner scale marked *BLACK FOR ANY MAP OF 2" GRID SQUARES* and *RED FOR ANY MAP OF 1" GRID SQUARES*
and an equivalency statement: *1 KILOMETRE = 1000 METRES = 1094 YARDS = 0.62 MILE (= 5/8 MILE NEARLY)*

Signature:

ASTON & MANDER 1917 LTD stamped at the lower right corner of the front.

90. English, late 20th-century

Blundell Harling

6" conversion scale to read dimensions in inches directly from a metric drawing.

Instrument:

6³/₄" x 1³/₈" plastic conversion scale for reading dimensions in inches directly from a metric drawing; includes five scales; white plastic with boxwood-colored panel on each side; smoothly convex double-bevel style.

Signatures:

BLUNDELL HARLING NO. 45-V; VERLUM® Made in England; RIBA CONVERSION SCALE B Foot/inch reading from Metric drawing.

91. English(?), 19th-century

2-inch ivory offset scale for an engineer.

Instrument:

Single 2" offset scale in ivory with two different scales on the two front bevels, and with four short unidentified additional scales added by an owner on the back.

92. Australian, 19th-century

Kasner & Moss

2-inch boxwood offset scale for an engineer.

Instrument:

Single 2" offset scale in boxwood with the same scale duplicated on the two recto bevels and with six very short unidentified additional scales added by an owner on the verso.

Signature:

*KASNER & MOSS *MELBOURNE*

93. Italian (Japan?), late 20th-century

Charvoz

4³/₄" triangular-section plastic scale for an architect.

Instrument:

4³/₄" scale of triangular solid plastic section with each of its six faces canted slightly to elevate the instrument from the drawing surface, each of its three sides with a different colored thin stripe, containing ten scales in total, finely engraved on the white plastic surface.

Signatures:

The Charvoz logo, *CHARVOZ*, and *30-0406* screened in black onto one face, and *JAPAN* apparently rubber-stamped in black on the end.

94. American, 20th-century

Theodore Alteneder & Sons

Pair of essentially identical 4" boxwood triangular-section scales for an architect.

Instrument:

A pair of 4" boxwood scales of traditional triangular section, each identically divided with six architect's scales in total.

Signatures:

THEO ALTENEDER & SONS PHILADELPHIA and *ALTENEDER DRAWING INSTRUMENTS* on both scales;
S.&H. WATERPROOF INDIA INK on one scale, *ALTENEDER'S PEN-FILLING INKSTAND* on the other scale

95. American, 20th-century

Woodrow

Assemblage of four small promotional scale rules for architects, three of wood and plastic, one of all plastic.

Instruments:

The JEM rule is 4⁵/₈" long, the others are each approximately 6⁵/₈" long; the ICF rule is a standard 4-bevel solid white plastic rule with the center section of each side colored in an approximation of the appearance of traditional wood with eight architect's scales in total; the Metropolitan rule is a solid light-colored wood rule with four applied white plastic strips in a 4-bevel format with eight scales in total; the JEM and Kuhn Smith rules are both solid wood with two applied strips on top bevels but with the standard eight scales, the bottom ones stamped directly onto the wood.

Signatures:

WOODROW on the wood rules, one including *MADE IN U.S.A.* The all-plastic rule has JAPAN rubber-stamped on the end. The firms being promoted are:

KUHN, SMITH & HARRIS, INC.

BUILDING CONTRACTORS

ESTABLISHED 1921

(212) 564-4983

METROPOLITAN BUSINESS SYSTEMS

N.Y., N.Y.

(212) 760-1600

HIGH DENSITY MOBILE STORAGE

FREE SPACE ANALYSIS

JEM DESIGNS

(212) 302-8400

ICF

305 East 63rd Street

New York, N.Y. 10021

96. American 1966

Keuffel & Esser

6" plastic scale for an engineer, in a leather pocket sheath, with its sales label and polyethelyne sleeve.

Instrument:

A standard-shape 4-bevel solid white plastic rule with the center section of each side colored in the signature K&E olive color, the four bevels each with a different engineer's scale, with its original hunter green sewn leather pocket sheath.

The loose sales label within the protective polyethelyne sleeve reads; ALL-PLASTIC ENGINEERS' FLAT SCALE IN LEATHER SHEATH 6 IN. 4 BEVELS **56 3578** MADE IN U.S.A. PRINTED IN U.S.. © KEUFFEL & ESSER 1966 K+Σ

Signature:

KEUFFEL & ESSER CO. N.Y., 1419W stamped on the scale, and the K+Σ logo stamped on the scale and on the leather sheath

97. American, 20th-century

B.K. Elliott Co.

12" cased triangular-section wood rule of improved shape with plastic faces, for an architect.

Case:

13-inch long open-ended pasteboard case of triangular section covered in textured black paper and lined in black velvet.

Instrument:

A nominal 12-inch (actual 12⁷/₈" x 1") architect's rule of improved triangular wood section with a total of 11 scales engraved on white plastic faces. An owner has pasted small number labels onto the scale of 16ths to mark off every ten units up to 100.

Signature:

B.K. ELLIOTT CO. 71604 with an owner's initials JS inked in on one side.

98. American, 20th-century

12" triangular-section wood rule of regular shape, for an engineer.

Instrument:

A nominal 12-inch (actual 13 $\frac{1}{8}$ " x 1") engineer's rule of regular triangular wood section with a total of six engraved scales.

99. American, 20th-century

Pickett & Eckel Inc.

12" yellow plastic rule of improved shape, for an engineer.

Instrument:

A nominal 12-inch (actual 12 $\frac{5}{8}$ " x 1") engineer's rule of improved yellow plastic section with a total of six engraved scales.

Signature:

PICKETT P232 E MADE IN U.S.A.

100. American, mid-20th-century

Keuffel & Esser Co.

12" double-sided double-bevel wood scale with plastic faces, for an architect.

Instrument:

A nominal 12-inch (12 $\frac{3}{4}$ " x 1 $\frac{3}{8}$ ") architect's rule of double-sided double-bevel style with rounded corners, of wood with white plastic faces with a total of eight scales.

Signature:

KEUFFEL & ESSER CO PARAGON 1400P and the K+Σ logo

101. Australian, 20th-century

W&G

12" opposite-bevel white-plastic-over-wood rule of two scales, for an architect.

Instrument:

A nominal 12-inch (actual 13" x 1⅛") architect's rule of wood core with white plastic faces of reverse-bevel section with a single scale on each face.

Signature:

> W&G < ACCURATELY ENGRAVED MODEL NO. WG/O1112A MADE IN AUSTRALIA

102. Australian, 20th-century

W&G

12" double-bevel single-face white-plastic-over-wood rule of two scales, for an architect.

Instrument:

A nominal 12-inch (actual 13" x 1¼") architect's rule of wood core with white plastic faces of double-bevel single-face section with a two scales.

Signature:

> W&G < FINEST ENGINE DIVIDED QUALITY MODEL NO. WG/S1412A MADE IN AUSTRALIA

103. English 19th-century

6" ebony parallel rule of typical form.

Instrument:

6" two-limb ebony parallel rule with a bevel to the upper edge, and a reverse bevel to the underside of the lower edge, with two shaped brass linkages of traditional design, with two brass buttons, and with the rivets at the linkages.

104. English 19th-century

6" ivory parallel rule of typical form.

Instrument:

6" two-limb ivory parallel rule with a bevel to the upper edge, and a reverse bevel to the underside of the lower edge, with two shaped nickel silver linkages of traditional design, with two nickel silver buttons, with the rivets at the linkages raised slightly.

Series VIII: Protractors

105. Italian?, early 19th-century

Unsigned

Ornately engraved, leather-cased, mother-of-pearl, semi-circular protractor.

Case:

12cm (4¾") long, 7.8cm (3") deep, 1.8cm (5⁄8") high; solid wood, covered all sides in black leather, gold-stamped with elaborate border tooling on all sides except hinge side, with stamped crowned device centered on top, with hand carved gilded brass catch and integral leather hinge; interior fitted and fully lined in light green velvet.

Contents:

Mother-of-pearl semi-circular protractor with scale divisions numbered in both directions, divided to half-degrees; with decoratively shaped cut-out center point surrounded by engraved decorative cartouche with decoratively engraved initials M.V.

106. English, second half, 19th-century

Joseph Louis Casartelli

Uncased circular brass protractor.

Item:

Circular brass protractor, 18cm (7½") diameter, with a decoratively shaped and beveled cross bar 2.3cm (7⁄8") wide, fully divided to half-degrees with numbers engraved in both directions every ten degrees.

Signature:

I. Casartelli Manchester. engraved in script on the cross bar.

107. English, early 20th-century

J. Halden & Co.

Semi-circular brass protractor.

Instrument:

Weighing 19.1 ounces, a 9" beveled semi-circular brass protractor numbered every ten degrees in both directions and divided to half-degrees, with the scales extending ten degrees past the horizontal at each end. The numbers are machine-engraved, and there is modest decorative embellishment to the lower limb.

Signature:

J. HALDEN & CO LTD. MANCHESTER & LONDON machine engraved on the lower limb.

108. Scottish, 2nd quarter 19th-century

Alexander Mathieson & Son

Engraved, heavy brass circular protractor.

Instrument:

Weighing 3.3 ounces, a 4-inch diameter circular protractor with a $\frac{5}{8}$ " horizontal crossbar with shaped open lower section, reading to whole degrees, and divided clockwise along the outer scale consecutively over 360 degrees beginning at 9:00 o'clock, with the four quadrants of the inner scale each divided from 0 degrees to 90 degrees. The numbers are punched and blackened.

Signature:

Alex^r. Mathieson & Son. Edinburgh. engraved in a flourished script.

109. American, circa 1900

Paul Roessler's Son

Silvered brass semi-circular protractor with attached diagonal-divided scale of inches.

Instrument:

4½" diameter silvered-brass semi-circular protractor divided to half-degrees and numbered every ten degrees in both directions, with an integrally attached 5½" x 1" scale, diagonal-divided to read to one hundredth of an inch.

Signature:

PAUL ROESSLER'S SON NEW HAVEN – CT. stamped on the front; an early owner's initials scratched on the back, reading A.V.O. '00 C A C

110. European, 19th-century

Brass semi-circular protractor with attached diagonal-divided metric scale.

Instrument:

A 5⅜" diameter brass semi-circular protractor divided to half-degrees and numbered every ten degrees in both directions, with an integrally attached 6¼" x 1¼" metric scale, diagonal-divided to read to one tenth of a millimeter, the numbers stamped and blackened, and additionally stamped 1:1000 and *Met.: *

111. French or English, early 19th-century

Brass semi-circular protractor with attached diagonal-divided scale of inches.

Instrument:

85mm-diameter brass semi-circular protractor divided to whole degrees and numbered every ten degrees in both directions, with an integrally attached 85mm x 20mm scale diagonally-divided to read to one-hundredth of an inch.

112. American, early 20th-century

Lacquered-brass semi-circular protractor

Instrument:

2½" diameter lacquered brass semi-circular protractor divided to whole degrees and numbered every ten degrees in both directions, with an integrally attached 3" x ¾" base.

113. French, 19th-century

Hand-engraved horn or mica semi-circular protractor.

Instrument:

66mm diameter semi-circular protractor of horn or mica, with divisions to whole degrees on the verso, and scratched numbers on the recto, marked only in the clockwise direction every ten degrees, but alternating between the inner and outer circles.

114. English, 19th-century

Brass semi-circular protractor.

Instrument:

3¾" diameter brass protractor, divided to whole degrees, and numbered in both directions with small stamped figures, with additional scribed circular and linear lines added.

115. English or American, 19th-century

Brass semi-circular protractor.

Instrument:

4½" diameter brass semi-circular protractor divided to whole degrees and numbered every ten degrees in both directions with stamped punches. The curved and straight limbs of the instrument are each ¾" in width.

116. English or German, 19th-century

Nickel silver protractor with vernier, extension arm, and horn center.

Instrument:

5½" diameter nickel silver semi-circular protractor, divided to half-degrees and numbered every ten degrees in both directions, extending to 15 degrees past the horizontal, with the numbers stamped with punches that resemble hand engraving, with a knife-shaped extension arm and vernier scale, the back of the instrument with a groove to accommodate a spring on the back of the vernier to maintain tension for smooth movement of the arm, and with a horn center.

Series IX: Proportional Dividers

117. English, circa 1780-90

William Fraser (circa 1720-1812)

Brass proportional dividers set in a lizard-skin case with gilt catches.

Case:

18.6 cm (7 $\frac{1}{4}$ ") wide, 4.2 cm (1 $\frac{5}{8}$ ") deep, 2.5 cm (1") thick; wood (pearwood?) with rounded corners and cushion top, covered in lizard-skin stained bright green, with three decoratively shaped gilt brass hook catches.

Contents:

Proportional dividers, 16.5 cm (6 $\frac{1}{2}$ ") overall length, brass with steel points and with a slotted steel stay and threaded rod for fine adjustments, hand engraved scales for Solids, Plans, Lines, and Circles [sic]

Fine hairspring divider 10.8 cm (4 $\frac{1}{4}$ ") long, brass with steel points, hand cut steel wing nut for adjustments, and double-leaf steel hinge

Polished steel adjustment tool 2.6 cm (1" +) long

Signature:

Frafer London hand engraved on one limb.

118. English or American, 19th-century

Silver proportional dividers with steel points, unmarked and unsigned, no case.

Instrument:

18.8 cm (7 $\frac{3}{8}$ ") long, silver with steel points, with decorative knurled adjustment knob, with scales hand engraved and marked as *Lines* and *Circles*.

119. English, 19th-century

Brass proportional dividers, unsigned, no case.

Instrument:

16cm ($6\frac{3}{8}$ ") long, brass, with steel points and with knurled adjustment knob, a scale marked *LINES* and an abbreviated scale marked *IN QUARTER*. The letters appear to be machine-engraved although the numbers may be either machine engraved or punched.

Signature:

machine-engraved initials *B.A.F.*

120. English, second half 19th-century

Unsigned, but likely by W.F. Stanley

Nickel-silver proportional dividers in leather-covered shaped case.

Case:

16.6cm ($6\frac{1}{2}$ ") long, wood and pasteboard covered in maroon leather, rounded at one end, tapered to the other, integral leather hinge, two shaped brass swivel catches.

Item:

Proportional dividers, 15.8 cm ($6\frac{1}{4}$ ") long, traditional English decorative shape, German silver with steel points, knurled adjustment knob, with hand-engraved scales for *Solids, Plans, Circles* and *Lines*.

121. English, fourth quarter 19th-century

Nickel-silver proportional dividers in leather-covered wood case.

Case:

19.5 cm ($7\frac{5}{8}$ ") long, wood covered in black leather with leather hinge and press catch, the inside of the top lined in padded maroon silk, the bottom lined in maroon silk velvet.

Instrument:

Proportional dividers, 17.4 cm ($6\frac{7}{8}$ ") long, German silver with steel points, knurled adjustment knob, traditional English decorative shape, a single scale for lines with stamped numbers

122. English, circa 1900

J. Halden & Co.

Nickel-silver proportional dividers in leather-covered wood case.

Case:

25.8 cm (10 $\frac{1}{8}$ ") wide, 3.2 cm (1 $\frac{1}{4}$ ") deep, 2.8 cm (1 $\frac{1}{8}$ ") thick; wood covered in thin worn black leather) and maroon imitation leather on bottom, with press latch, the interior of the top lined in blue silk, the bottom lined in blue velvet.

Item:

Proportional dividers, 23.8cm (9 $\frac{3}{8}$ ") overall length, traditional English decorative shape, German silver with steel points, knurled adjustment knob, with scales for Solids, Plans, Circles, and Lines.

Signature:

J. HALDEN & CO. LD. MANCHESTER & LONDON machine engraved on one limb

123. English, circa 1900

Negretti & Zambra

Nickel-silver proportional dividers in leather-covered wood case.

Case:

33cm (13") wide, 5.4cm (2 $\frac{1}{8}$ ") deep, 4.3cm (1 $\frac{3}{4}$ ") thick; wood, covered in thin maroon pebble-grain leather with blind-tooled lines, the bottom covered in black pebble-grain imitation leather, with press-latch, the interior of the top lined in padded blue silk, the bottom lined in purple silk velvet; the end of the case with an old typewritten paper label reading "Cta. No .984 Compases de reducción," the top with the remains of an old label with a similar faded hand-written ink inscription.

Contents:

Proportional dividers, 31cm (12 $\frac{1}{4}$ ") overall length, each limb 6.5mm ($\frac{1}{4}$ ") thick, weighs 15.9 ounces, traditional English decorative shape, German silver with replaceable steel points, knurled adjustment knob, with scales for Solids, Plans, Circles, and Lines; within the case are two additional pairs of long points and a single additional short point, and an adjustment tool.

Signatures:

NEGRETTI & ZAMBRA LONDON and an N&Z logo monogram machine engraved on one side of the instrument, OFICINA HIDROGRAFICA VALPARAISO machine engraved (different machine) on the other side.

124. German, first half 20th-century

Gebrüder Haff

Nickel-silver proportional dividers in case.

Case:

22 cm (8¾") long, cushioned rectangular, with rounded corners, wood covered in black fabrikoid, with sliding-rod catch, lined in dark Prussian blue velvet.

Instrument:

19.5 cm (7⅝") long, German silver with replaceable steel points, knurled adjustment knob, scales for Lines and Circles [in English], with stamped numbers.

Signatures:

HAFF *PRAZISION* blind-stamped on outside of case; *GEBRÜDER HAFF PFRONTEN GERMANY* gold-stamped on a leather label (damaged) glued inside the top; *Gebrüder Haff Pfronten 28* stamped or machine-engraved on the instrument.

125. German, first half 20th-century

Riefler

German silver proportional dividers in case.

Case:

20 cm (7⅞") long, cushioned rectangular, with rounded corners, wood covered in black fabrikoid, with sliding-rod catch, lined in black velvet.

Instrument:

17.5 cm (6⅞") long, German silver with replaceable polished steel points, knurled adjustment knobs, one to operate the locking device, and the other to operate the geared adjustment mechanism; two scales for lines and circles, labeled [in German] *Linien* and *Kreise*.

Signatures:

RIEFLER GERMANY and *14* machine-engraved on instrument; *RIEFLER* logo and *Ta* blind-stamped on top of the case, and *GERMANY* on the bottom.

126. American, circa 1950

Cased aluminum proportional dividers.

Case:

23.6 cm (9¼") wide, 5.1 cm (2") deep, 2.8 cm (1⅛") thick; wood, covered in black fabrikoid, with slide catch, lined in maroon cotton velvet.

Instrument:

Proportional dividers, 20.3 cm (8") long, aluminum with steel points and German silver(?) knurled adjustment knob and slider, machine-engraved scales for Lines and Circles.

Signature:

BOWAN & COMPANY BETHESDA, MD. U.S.A. P-808 blind stamped on the case. *BOWEN* within a double circle as a logo, *MADE U.S.A.*, and 273 machine-engraved on the instrument.

Series X: Specialized Sets and Individual Instruments

127. English, fourth quarter 19th-century

William Ford Stanley (1829-1909)

Set of three spring bows in red-leather pocket case.

Case:

9.3cm (3⁵/₈") x 6.8cm (2³/₄"); wood, covered top and sides in dark red leather and on bottom with a similar impregnated cloth; padded purple watered silk lining to top, fitted bottom lined in black velvet; decorative swivel catch.

Contents:

Set of three steel side-wheel bow compasses with knurled handles with spherical knop ends.

Signature:

STANLEY GT. TURNSTILE HOLBORN W.C. gold-stamped within a ribbon design on the silk lining of the lid.

128. Probably English, possibly French, second half 19th-century

Unsigned

Set of three spring bows in round-cornered pocket wallet case.

Case:

12.5cm (5") x 7.8cm (3"); wood, covered on top with thin black leather and on bottom with black paper, padded purple silk lining to top, fitted bottom lined in tan velvet; press catch, replaced leather hinge.

Contents:

Set of three plated steel bow compasses with turned ivory handles.

129. American, circa 1900

Theo Alteneder & Sons

Set of three spring bows in an imitation leather case.

Case:

12.7cm (5") wide, 10.3cm (4") deep, 2.5cm (1") high; wood, top covered in black Morocco-grained leather with blind-tooled lines, bottom covered in black cloth imitating leather, interior lined in green silk velvet, the bottom fitted; with slide catch.

Contents:

Set of three knurled center-wheel spring bow compasses (ink, pencil dividers) with finely knurled handles.

Signature:

Two (of three) adjustment wheels stamped *T.A. & SONS*; glued to inside of lid is a one-inch diameter embossed "bronze" label reading *ALTENEDER DRAWING INSTRUMENTS Δ MADE IN PHILADELPHIA SINCE 1850*; pencil bow stamped on one leg: *S.S.*

130. English, third quarter 18th-century

Benjamin Martin (1705-1782)

Brass pantograph in wood case.

Case:

Trapezoidal, 59cm (23¼") long, 6.5cm (2½") wide at left, 10.5cm (5¾") wide at right, 9.5cm (3¾") high; mahogany, hand dovetailed, with two shaped brass catches, lock with large decorative brass escutcheon, two different old keys, both of which work the lock; exterior refinished.

Contents:

Brass four-armed pantograph 58cm (23") long with four ivory-wheeled casters, two arms engraved with scales in inches and proportions; tracing "handle" lacking the tracing point but including tensioning string; [lacking the large circular weight and the pencil point]; one of three eyelets for the tension string broken off; two of the many brass screws replaced with later steel ones.

Found with the instrument: a 16-page 8vo pamphlet titled "*An Appendix to the New Art of Surveying; Containing a New Construction of a Pantograph, Which renders it of universal Use in reducing or enlarging Plans, Drawings, Pictures, Portraits, &c. in Copies bearing any required Proportion to the Original by B. Martin. London. Printed for, and sold by the author, No. 171 Fleet-Street.*" Also an engraved plate 17.5cm x 19.5cm (6⅞" x 7¾") with two figures, titled "*The Universal Pantograph Invented & Made by B. Martin, London.*" and outside the border "*W. Whitchurch, sculpsit.*" (the name of the engraver). The figures (with identifying letters at various points) correspond to the instrument and its use as described in the pamphlet.

Signature:

Engraved on shortest arm of instrument in script: *Improv'd & Made by B Martin Fleet Street London.*

131. American, early 19th-century

Brass multi-function instrument combining: a scale of inches and halves with diagonal divisions reading to 0.01 inch, with a parallel rule, with a protractor that includes a plotting index arm with vernier readout.

Case:

34.2cm (13½") wide, 14.5cm (5¾") deep, 3.2cm (1¼") thick; walnut, made of two strips and two boards, closely fitted for the instruments by drill, router, and hand-carving, with two crudely hand-cut metal swiveling pieces to retain the instruments, closing by means of two hand-cut brass swivel catches.

Contents:

Brass multi-function instrument: the semi-circular protractor 16.5cm (6½") in diameter, the index arm 17cm (6-11/16") long, the parallel rule 31.3cm (12¼") long, the numbers stamped, engraving not deeply cut, with the divisions and numbering extending in both directions on the protractor and extending to 190 degrees with the circular lines extending further.

Found with the instrument (and for which there is a place in the case) is a brass divider 14.8cm (5⅞") long with double steel leaf joint and removable steel divider leg [lacking set screw].

132. English, circa 1800

Brass universal drawing instrument combining divider with ink and pencil compasses, in a sharkskin-covered pasteboard pocket case.

Case:

5¾" long, ¾" wide at the top, ½" thick; black sharkskin glued over a shaped pasteboard étui with a pull-off top, the interior lined in green paper.

Instrument:

Brass universal drawing instrument, 5" long (capable of drawing a circle to a maximum radius of 6") with steel joint leaves, which appears to have been a predecessor to the Pillar compass (see Item 107 in this collection). The pair of octagonal jointed limbs are hollow, each holding a jointed double-ended leg – one a divider point and a pencil-lead holder with retaining ring, the other a divider point and an ink pen with a similar ring to adjust the spacing of the pen blades.

133. English, 19th or early 20th-century

Brass universal tubular compass.

134. English 19th or early 20th-century

Pair of nickel silver Napier compasses in a maroon leather-covered pasteboard case.

135. English, 19th or 20th-century

Pair of nickel silver Pillar compasses in a maroon leather-covered wood or pasteboard case.

136. American (?), after 1872

O. Stoddard

Pair of brass and steel compasses with reversible points, extension legs, and fixing arc with fine adjustment control.

Instrument:

Weighing 8.6 ounces, 8" (extendable to 10") brass or bronze compasses with steel joint screw; quarter-circle steel arc (to the right) and knurled steel thumb-screw to fix legs at desired opening plus fine adjustment by knurled-knob screw and leaf-spring; fixed divider point to one leg and screw-in reversible pencil/divider point to the other; both legs with internal extensions secured with 4-rib knurled fixing rings; the upper part of each leg of solid brass square section, the lower part of hollow brass tube, with steel extension legs that are solid at upper ends with one leg hollow at lower end to take the reversible pencil/divider point.

Signature:

O. STODDARD and PAT'D AUG. 27, 1872 in an ellipse on one leg, and IMP-T APPL-D FOR on the other.

137. European (?), 19th-century (?)

Pair of brass and steel lithographer's compasses with removable lower legs and fixing arc.

Instrument:

Weighing 9.6 ounces, 6½" pair of brass compasses with steel joint screw and toothed brass retaining washer; quarter-circle steel arc (to the left) secured with decorative steel wing nut and with elliptical steel thumb-screw to fix legs at desired opening; tapered steel end legs each with double scribed rings at the top and secured with slotted steel screws; one leg with a small point, the other with a large bulbous point; probably for use by a lithographer.

Signature:

A touch-mark stamped on each limb, looking like a lower-case "c" combined with the upper part of a capital "J".

138. English, 19th-century

Pair of brass and steel lithographer's compasses with removable jointed lower legs and fixing arc with fine adjustment control.

Instrument:

Weighing 10 ounces, 7¾" pair of brass compasses with double-leaf steel sector joint adjustable by spanner tool (not present); quarter-circle steel arc (to the left) and elliptical thumb-screw to fix legs at desired opening plus fine adjustment by knurled brass setting nut and slotted steel fixing screw; both lower legs removable (held in place with knurled-head brass screws) and jointed; the right leg steel with sharp conical tip, the left leg brass with pencil-holder.

139. English, second half 19th-century

Pair of nickel silver and steel pocket dividers with screw-on sheath and ring.

Instrument:

5¾" nickel silver dividers with single-leaf steel joint (adjustable with a spanner tool) and fixed steel points, with screw-on nickel-silver sheath with end finial and ring.

140. English, fourth quarter 19th-century

A.G. Thornton

Set of fittings for a beam compass in a leather-covered wood case.

Case:

12.8cm (5") long, 6cm (2³/₈") deep, 3cm (1¹/₈") high; black leather over wood with press catch; inside of top lined in padded blue silk, bottom fitted and lined in blue velvet.

Contents:

Pair of German silver fittings for a beam compass with two removable divider points, pencil leg, lacking ink leg, one fitting with worm-gear fine setting knob.

Signature:

One of the fittings stamped *THORNTON REG NO. 529439*, the lining of the top gold-stamped within ribbons *A.G. THORNTON LIMITED / PARAGON WORKS / PRACTICAL MANUFACTURERS / KING ST WEST / MANCHESTER*.

141. American, second quarter, 20th-century

Eugene Dietzgen Co.

Set of fittings for a beam compass in a leatherette-covered wood case.

Case:

4.8cm (5⁷/₈") long, 7cm (2³/₄") deep, 3.2cm (1¹/₈") high; wood, covered in black leatherette fabric, lined in blue velvet, with a sliding-rod catch.

Contents:

Pair of German silver fittings for a beam compass, one with a removable pencil leg and a separate ink leg, the other with a fixed needle-point divider leg with a micrometer adjustment, small cylindrical white metal case for spare leads.

Signature:

The instrument stamped *DIETZGEN GERMANY*, the case silver stamped *DIETZGEN* in a shaped oval and *MADE IN GERMANY* and blind-stamped 978.

142. German, fourth quarter 20th-century

Multi-arm spacing divider in a plastic case.

Case:

17.4cm x 8.5cm x 2.4cm (6⁷/₈" x 3³/₈" x 1"); black plastic with eased corners and edges and press-catch, the top and bottom with red-flocked plastic inserts, the bottom one fitted for the instrument.

Instrument:

6" long stainless steel spacing divider (sometimes called an Oil Field Divider) consisting of two long arms, four shorter ones, and many very short ones, terminating in eleven numbered sharp-pointed legs forming ten equal spaces.

Series XI: Slide Rules and Other Computational Devices

143. French, circa 1750

Clerget

Brass sector of typical 18th-century form.

Instrument:

Brass sector; when closed: 17.3cm (6⁷/₈") long, 3.1cm (1¹/₄") wide, 4mm (5/64") thick, 6.1 oz. in weight; with a decoratively shaped joint-reinforcement element and two alignment pins; the joint engraved with a traditional decoratively stylized flower, fully hand engraved with scales on both sides of both limbs, marked:

Les Parties Egales

les plans

les polygones

les Cordes

les Solides

les Metaux

Calibre des pieces

poids des boulets

Signature:

Clerget AParis au Butterfield decoratively engraved on the face

144. English, first half 19th-century

Robert Brettell Bate (1782-1847)

Ivory sector of the typical English pattern.

Instrument:

Ivory sector; when closed: 15.9cm (6¹/₄") long, 3.5cm (1³/₈") wide; with a round brass joint, small brass inserts at the ends of the scales, two brass alignment pins, and marked ★; engraved with arithmetic and logarithmic scales.

Signature:

BATE LONDON stamped on the face in a serif Roman font.

145. American, circa 1966

Keuffel & Esser Co.

Deci-Lon pocket slide rule.

Instrument:

5-inch (length of scales; actual size of rule is approximately 7" x 2" Deci-Lon-5 pocket slide rule, model number 68-1130 with serial number 037888 marked on the slide (the frame numbered 888), with 13 scales on each side (two duplications), with orange leather pocket sheath with spring clip, and with original box and inner tray liner, the box marked with a copyright date of 1966, the price of \$16.50 written on the box in ink.

146. American, circa 1958

Keuffel & Esser Co.

Adjustable Duplex pocket slide rule.

Instrument:

5-inch (length of scales; actual size of rule is approximately 6 $\frac{5}{8}$ " x 1 $\frac{1}{2}$ ") Duplex slide rule model number 4168 with serial number 423526 marked on the slide (the frame numbered 526), with seven scales on each side (one duplication), for multiplication, division, proportions, logarithms, squares, square roots, cubes, cube roots, and trigonometric functions; of white plastic with sliding indicator, and with green leather pocket sheath and accompanying 70-page "Slide Rule Manual" for this instrument.

147. American, circa 1958

Keuffel & Esser Co.

Adjustable Log Log Duplex Trig slide rule.

Instrument:

Adjustable 10-inch (actual size approximately 12 $\frac{1}{2}$ " x 1 $\frac{5}{8}$ ") Log Log Duplex Trig slide rule model number 4081-3 with serial number 765139 on both the slide and the frame; of mahogany body with engine-divided divisions on white ivory-like facings, with sliding spring-mounted glass indicator, with trigonometrical scales divided to represent degrees and minutes, with ten scales on each side (one duplication).

148. American, circa 1925

Keuffel & Esser Co.

Adjustable Polyphase Duplex slide rule.

Instrument:

Adjustable 10-inch (actual size approximately 12" x 1¼") Polyphase Duplex slide rule model number 4088-3 without serial number; of mahogany body with engine-divided divisions on white ivory-like facings, with sliding spring-mounted frameless glass indicator, with five scales on one side and eight scales on the other (one duplication).

149. American, circa 1958

Keuffel & Esser Co.

Pocket slide rule.

Instrument:

5-inch (actual size 6" x 1⅛") simple pocket slide rule model number 4150-1 with serial number 027364 marked on the slide (the frame numbered 364), of white plastic with an unbreakable sliding indicator, for multiplication, division, and proportion, with six scales on the front only, with green leather pocket sheath with spring clip.

150. American, circa 1950

Pickett & Eckel Inc.

Aluminum pocket slide rule.

Instrument:

5-inch (actual size 6" x 1⅛") aluminum pocket slide rule with white enamel faces, by the "other" important maker of slide rules, Pickett & Eckel Inc., model number 200, with a plastic-and-aluminum sliding indicator, and with seven scales on the front and three on the verso of the slider.

151. American, 20th-century

C-thru Ruler Company

Circular proportional scale rule.

Instrument:

6-inch diameter circular proportional scale consisting of two thin plastic concentric discs revolving about a central rivet, the outer disc of 6" diameter, the inner of 5" diameter with an arc-shaped rectangular cut-out window. The outer disc is printed with a non-linear scale marked from 1" to 100" and identified as REPRODUCTION SIZE. The inner disc is printed with a similar scale and identified as SIZE OF ORIGINAL. Appearing within the inner disc's cut-out window (but printed on the outer disc) are two scales; the inner scale is divided from SAME SIZE to 10 with a pointer at the lower edge of the window marked NUMBER OF TIMES OF REDUCTION; the outer scale is divided from 10 to 990 with a pointer at the upper edge of the window marked PERCENTAGE OF ORIGINAL SIZE.

Signature:

PS 79 PROPORTIONAL SCALE C-THRU RULER COMPANY 6 BRITTON DRIVE BLOOMFIELD CONN., U.S.A.

152. German, 20th-century

Addiator

Hand-held mechanical adding/subtracting machine for an architect, with its leather sheath.

Instrument:

6¼" x 1½" mechanical adding/subtracting machine, metal embossed and enameled in black, green, and brass color, with six internal slotted slides enameled in red and white, a brass stylus for operating the machine in a retaining clip, and a brass handle for clearing the slides.

Signature:

ADDIATOR SYSTEM ADDFEET Junior MADE IN GERMANY

153. American, 20th-century

Fredenburg & Lounsbury, Inc.

Three-layer stiff card Computing Brick Schedule

Instrument:

Two stiff cards, each 7½" x 5" glued together at three edges, with a 4¼" diameter circular card between them, revolving on a metal grommet with a cut-up at the top of the rectangular cards to permit the circular card to be conveniently turned. Each rectangular card has seven small cut-out windows. The first window is labeled *Number of Courses* (1-25 on one side and 26-50 on the other). The other windows are collectively labeled *Standard Brick plus ⅛" to ¾"* *Joints*, and individually labeled with specific dimensions under the collective label.

Signature:

On both sides of the instrument: *FREDENBURG & LOUNSBURY, INC. 101 PARK AVE., NEW YORK MURRAY HILL 3-5650* printed in red; and *Copyright 1921 by SHERMAN D. BENNETT, 154 Myrtle Street, MELROSE, MASS.* printed in black.

154. American, circa 1962

PERRYGRAF Corp.

Slide-rule for floor tile calculations.

Instrument:

8⅜" x 3⅛" laminated-card slide rule, the front with two sets of scales and cut-out windows.

Signatures:

VPI VINYL PLASTICS, INC., 1825 ERIE AVENUE, SHEBOYGAN, WISCONSIN; Slide-Chart Copr. 1962, PERRYGRAF Corp., Maywood, Ill.

155. American, circa 1942

E.H. Needham

Set of three printed-card movable-wheel charts and accompanying instructions to aid in solving trigonometrical problems.

Instruments:

Set of three printed-card moveable-wheel charts to aid in solving problems in plane, solid (compound-angle), and spherical trigonometry; each $3\frac{3}{4}'' \times 3\frac{1}{4}''$ in an orange paper envelope (worn) $6\frac{3}{8}'' \times 4''$, reading *TRIG-EASY TRIGONOMETRICAL CHART AND INSTRUCTIONS*; the plane chart with an 8-page folding instruction sheet reading *TRIGONOMETRY FOR DEFENSE WORKERS MADE EASY with TRIG-EASY*; the spherical chart with a 16-page booklet reading *TRIGONOMETRY FOR DEFENSE WORKERS MADE EASY with Spherical TRIG-EASY*; the solid chart with a 112-page booklet reading *TRIG-EASY MANUAL for COMPOUND ANGLES and RELATED TRIANGLES Containing Six-Decimal Function Tables*.

Signatures:

COPYRIGHT 1942 [AND 1943]. EARL H. NEEDHAM, CULVER CITY, CALIF., U.S.A.; SOLD BY EUGENE DIETZGEN CO.

156. Swiss, 20th-century

Minerva

Rolling-wheel dial-reading instrument for cumulative measurements of straight and curved lines, sometimes called a map measure.

Instrument:

$1\frac{1}{2}''$ diameter, $3\frac{7}{8}''$ overall height with handle; precision rolling-wheel instrument with dials for cumulative measurement of linear or curving lines at scales of $\frac{1}{8}''$, $\frac{1}{4}''$, and $\frac{1}{2}''$ to a foot, with a subsidiary wheel recording complete turns of the pointer, and with a handle and a reset button.

Signature:

Minerva SWITZERLAND SWISS MADE

Series XII: Triangles and French Curves

157. American, mid-20th-century

Keuffel & Esser

10-inch adjustable clear plastic triangle

Instrument:

10-inch clear plastic (xylonite) adjustable triangle number designated 1239-10 and called by K&E a Tri-Tractor.

Signature:

KEUFFEL & ESSER CO and the K+Σ logo engraved in the plastic, now worn and faint; an owner's initial *A* is scratched into the face using a "Corbu" stencil.

158. English, late 19th-century

W. H. Harling

Mahogany, ebony, and nickel silver adjustable device for drawing angled lines.

Instrument:

Adjustable device for drawing angled lines, 6" x 4", consisting of two ebony-edged mahogany limbs fixed at right angles with a third movable limb adjustable by means of a nickel silver arm with an indicator point, pivoting in a quarter-circle arc marked in whole degrees, with a knurled knob to secure it in position.

Signature:

Nº 107 W.V. COOK'S PATENT W.H. HARLING MAKER LONDON

159. English, late 19th or early 20th-century

Clinograph or adjustable set-square.

Instrument:

7" x 4 $\frac{1}{8}$ " pearwood device for drawing angled lines, with two limbs fixed at a right angle, and with a movable third limb with a tight friction joint of flush-set brass plates.

Signature:

THE CLINOGRAPH' HARRISON'S PATENT, with an owner's name *J.C. WARD*. scratched in.

160. Italian, 4th quarter 20th-century

Pierluigi Ghianda

Pearwood 45° triangle, with its original stiff paper wrapper.

Instrument:

A 45° triangle, 6 $\frac{7}{8}$ " high, constructed of three limbs of bevel-edged thick pearwood with two additional pieces dovetailed across the normally-open triangular center space, with low-sheen lacquer finish.

Signature:

The instrument stamped at the right-angle joint with a tree within an oval, the folded stiff paper wrapper embossed with a larger version of the same tree logo and with the name of the maker *Pierluigi Ghianda*, the wrapper with a label reading *MADE IN ITALY* and a sales sticker reading 3687 MoMA from the Museum of Modern Art in New York.

161. English, late 19th or early 20th-century

6" x 3 $\frac{3}{8}$ " 60° pearwood triangle with beveled edges, the two right-angle edges scribed with a scale of inches divided to eighths, the center with a $\frac{3}{8}$ " hole, with an owner's name *M. Littlewood* inked onto the surface.

162. English, late 19th-century

Pair of triangles, one 7" 45° and one 8" 60° one; each of mahogany, with edging of a darker wood (possibly dark-stained mahogany).

163. English, later 19th-century

6" 45° triangle of mahogany with ebony edges.

164. American[?]

Pair of triangles, one 3¾" 45° one and one 6¾" 60° one; each of unvarnished mahogany with a ½" hole in the center.

165. American or French[?]

Pair of 45° triangles, 4⅝" and 2⅞", cut from thin metal sheet, possibly of galvanized steel, each with a ¼" hole.

166. English, later 19th-century

Reeves & Son

Pair of triangles, one 4" 45° one and one 6" 60° one; each of Vulcanite with a hole in the center.

Signature:

Signed *REEVES & SON LONDON* around a circle, the 60° one so stamped.

167. English, later 19th-century

A.G. Thornton

9" 45° wood-colored plastic triangle with a ½" hole in it.

Signature:

Stamped *A.G. THORNTON L^{TD} MANCHESTER*.

168. English, late 19th-century

W.F. Stanley & Co

Set of three black plastic or hard rubber lettering triangles, the segmented hypotenuse of each marked for particular letters, for narrow, medium and wide lettering.

Signature:

Each stamped *STANLEY LONDON*.

169. English, late 19th-century

Elliott Brothers

Set of three black plastic or hard rubber lettering triangles, the segmented hypotenuse of each marked for particular letters, for narrow, medium and wide lettering.

Signature:

Each stamped *ELLIOTT BROS LONDON*.

170. Various provenances, undated

Assemblage of seven French curves:

4⅛" hard rubber s-spiral shaped, stamped *STANLEY LONDON*

11¼" pearwood, sleigh-shaped (splits), marked with an owner's cipher of a fox head and initials G B C

7" boxwood bird-shaped

10¼" mahogany

8¾" yellowed plastic, stamped *DORIC K&E CO. 8823G*

5¼" yellow plastic, stamped *DORIC K&E CO. 8823A*

8½" yellowed plastic, stamped *DIETZGEN EXCELLO 2152-15*

Series XIII: Miscellaneous and Orphan Items

171. English[?], late 19th-century [?]

A device for setting off distances, consisting a pair of 6" long parallel pieces of hard rubber spaced ¼" apart by a pair of hard rubber and metal pieces at each end, with a fixed marking pin at the right end, and with a second marking pin in a movable piece with a knurled brass knob to fix the distance between the two pins.

172. English, late 19th-century

W.F. Stanley & Co.

Two brick gauges to set off thicknesses of brickwork at ⅛" scale, of nickel silver with paired steel points:

- square with inset quarter-round corner cut-outs and a hole in the middle, and with four paired points for 4½", 6", 14" and 18" brick, stamped *STANLEY*
- square with rounded corners and with four paired points for 4", 5", 6" and 11"

173. Various Origins

An assemblage of 17 ruling pens and other pens plus extra handles:

- railroad pen with ivory handle with elegantly-turned finial end, English 19th-century
- turned brass handle unscrewing to reveal pin-pricker, with brass blades with steel points, the upper blade hinged for cleaning and secured with a knurled knob, English 18th-century
- unusual ebony handle with brass top with knurled-knob end and brass ferrule with steel blades, the upper hinged for cleaning and secured with an elegantly cut brass wing nut of simple but unusual shape, English 18th-century
- ivory handle with elegantly-turned finial end, nickel silver blades with steel points, the upper blade hinged for cleaning and secured with a knurled knob, signed *HARLING*, English 19th-century
- ivory handle with old repair to broken-off end, brass blades with steel points, the upper blade hinged for cleaning and secured with a knurled knob, English, 19th-century
- ivory or bone handle with turned finial end, brass ferrule and block into which is set fixed steel blades with flat-top knurled steel adjustment screw, English ? Continental ? 19th-century

reverse-taper ivory handle with rounded end, brass ferrule, fixed steel blades with steel separator block with flat-top knurled steel adjustment screw, Continental ? 19th-century bone handle with ball-finial end, knurled nickel silver ferrule, steel blades, the lower one swiveling for cleaning (without disturbing the line width, set by a knurled-edge adjustment wheel numbered on top for settings), Continental, early 20th-century matched pair, each with shiny black plastic handle and with blades and ferrule cut from single block of steel with flat-top knurled-edge adjustment screw, 20th-century brass ferrule with double knurl-edge rings and brass block separating fixed steel blades with flat-top knurled-edge steel adjustment screw [lacking handle], Continental[?]. broad-bladed border pen with fixed steel blades, knurled-edge nickel silver adjustment screw with concentric rings on top, broad ebony handle of rectangular section, signed *SCHOENNER GERMANY*, late 19th or early 20th-century broad-bladed border pen with fixed steel blades, knurled-edge nickel silver adjustment screw with concave top, broad ebony handle of tapering rectangular section five orphan ivory ruling-pen handles tapering varnished-wood pen-point holder with black-plastic ferrule, stamped *Nº 116½ "KOH-I-NOR" GERMANY* tapering red-painted wood pen-point holder with rubber ferrule, stamped *A.W. FABER HAMLET 450 U.S.A.* three black plastic drafting fountain-pens numbers 0, 2, and 3, signed *KOHINOOR RAPIDOGRAPH*

174. Various Origins

A 7½" charm bracelet of silver-colored metal with 12 charms, comprising triangle, parallel rule, French curve, slide rule, T-square, ink bottle, triangular-section scale rule, adjustable drafting table, spring bow compass, proportional dividers, semi-circular protractor, and ruling pen.

175. Various Origins

An assemblage of nine spring bow compasses:

side-wheel ink bow with turned ivory handle and complex extended finial, brass ferrule and adjustment knobs
side-wheel ink bow with turned darkened ivory handle and complex extended finial, nickel silver ferrule and adjustment knobs
set of side-wheel ink, pencil, and divider bows, each with turned ivory handle and elegant finial, nickel silver ferrule and adjustment knobs, divider with broken main adjustment screw

side-wheel divider bow with nickel silver ferrule and broken ivory handle
side-wheel pencil bow with broken leg, and with nickel silver ferrule and ivory handle with elegant finial
side-wheel ink bow with knurled nickel silver handle with eight incised annular rings
center-wheel plated metal divider bow stamped *TACRO GERMANY*

176. Various Origins

An assemblage of five small compasses:

- a pair of 4" nickel silver ink and pencil compasses with jointed legs and the ink compass with a hinged blade, each with knurled handle with three incised annular rings and simple finial, stamped *THORNTON*
- 4" nickel silver ink compass with jointed legs and with handle with knurled grip and tapered finial
- 4¼" nickel silver ink spring-bow drop compass, stamped *K&E CO GERMANY* and a key-shape logo
- 4¾" plated metal double-spring bow drop compass with removable pencil leg, the top of the knurl-edged adjustment knob stamped *BRUNING GERMANY*

177. Various Origins

An assemblage of 13 compasses and dividers:

- 6¼" nickel silver compasses with sector head joint, jointed legs and with one fixed and one removable splined round-shaft slip-in divider point, together with ink, pencil, and needle-point divider legs
- 6½" nickel silver compasses with single-leaf head joint, one fixed jointed needle-point divider leg and one removable non-jointed divider leg
- 6¼" nickel silver compasses with handle and with one fixed hairspring-setting jointed needle-point divider leg and one removable jointed needle-point divider leg
- 6¼" nickel silver compasses with sector head joint, one fixed jointed needle-point divider leg (defective), and place for removable leg, stamped *THORNTON*
- 4¾" nickel silver compasses with sector head joint, one fixed jointed needle-point divider leg and one removable jointed ink leg with hinged blade, the compass and the removable leg each stamped *S*
- 5½" brass compasses with double-leaf head joint, with fixed steel divider leg and place for removable leg held in place with hand-cut steel wing screw, English, late 18th or early 19th-century

- 3⁵/₈" brass compasses with single-leaf head joint with replaced screw, one steel-point divider leg, the other leg with device for holding an ordinary lead pencil with a screw-on brass retaining ring
- 6" textured black-enameled metal compasses with white plastic handle and red plastic knurled adjustment knob, one steel-point divider leg, the other leg with black plastic device for holding an ordinary lead pencil with a screw-on red plastic retaining ring, signed *MAPED MADE IN FRANCE*
- 5¹/₄" nickel silver hairspring divider with sector head joint, stamped *THORNTON*
- 5¹/₄" nickel silver hairspring divider with sector head joint, defective, stamped *HARLING*
- 5³/₈" nickel silver dividers with steel points and with single-leaf head joint
- 5³/₄" plated metal tubular divider with simple joint and knurled handle and with replaceable points stamped with a crown and *A & M 1942*
- 6" pewter-finish metal dividers formed and decorated in imitation of a 17th-century original, modern

178. Various Origins

Various items:

- an assemblage of five brass and four nickel silver jointed ink legs for compasses together with
 - a single all-steel ink leg for a drop compass or a beam-compass fitting together with
 - three brass jointed pencil legs for compasses together with
 - three fixed steel divider legs and one jointed nickel silver needle-point divider leg for compasses together with
 - three nickel silver and four brass extension legs for compasses together with
 - a package of sewing needles used as replacements in needle-point divider legs, the paper package printed with a drawing of an English country church and signed *H. MILWARD & SONS REDDITCH CHURCH BRAND SHARPS No 59*, English, 19th-century together with
 - two packages of leads, the cedar wood insert of each drilled with separate holes for each of the six leads, the pasteboard cover with paper label ornately printed *Box of 1/2 Dozen British Graphite "Koh-i-noor" compressed Lead Refills 3H made by L & C Hardtmuth Austria* together with
 - three brass thumb tacks with swinging handles for easy removal from a drafting board together with

a small steel file with a pointed end, for repairing divider points and ruling pen blades,
stamped *WHEELER MADDEN & CLEMSON*
together with
a 3" triangular steel ruler, the three sides marked in eighths, sixteenths, and thirty-seconds
of an inch, stamped *D B & S PROV. R.I.*

179. American[?], late 20th-century

Pair of glazed ceramic salt and pepper shakers, 4¾" x 1½", each with bottom hole plugged with a removable polyethylene stopper; the salt formed as a stubby hexagonal lead pencil, the yellow enameled shaft "sharpened" to reveal the stylistically grained wood interior with black lead rounded point and with two small holes in one face of the wood (to allow the salt to be sprinkled); the pepper formed as a stubby fountain pen end, with a flesh-colored shaft (with "threads" to accommodate a screw-top), a black ferrule, and a gold point (with correctly placed hole, here serving to allow the pepper to be sprinkled) backed with black ink flow insert.

180a. Italian, mid-20th-century

Piero Fornasetti

Necktie of black silk with a background of Fornasetti's trademark suns, with the two edges printed in yellow with black lines and numbers as a broad inch ruler on one edge and a narrow metric ruler on the other, the front of the tie printed in light gray and black with a pair of pencil compasses, and the narrower back end similarly printed with a ruling pen; the embroidered label signed *FORNASETTI MILANO – MADE IN ITALY*, and with a card tag attached with a black cord and printed in Italian.

180b. Italian, late-20th-century

Piero Fornasetti

"Architetto" waistcoat. Man's silk waistcoat designed by Fornasetti in 1947 as a fanciful architectural façade with tile roof and dormer windows, with two functioning lower pockets and two non-functioning upper pockets with trompe l'oeil architectural drawing instruments protruding. Originally made in 1948 by Fornasetti as a single example for himself, as illustrated in *Fornasetti: Designer of Dreams*, p. 106. Made as a commercial item in limited numbers in the 1980s. This example, which was not made later than 1990, when

sales of the item ceased, was found in the storerooms of the company of Fornasetti's son Barnaba. 2007.020.

181. English, 21st century

Timothy Richards, Keynsham, England.

A cast stone model of the 1873 Burlington House arched gateway of the Royal Academy of Art, London, painted, with a cut-out painted brass model of the iron gate within the arch. 8" high x 7 $\frac{1}{8}$ " wide x 3" deep.

182. French, 1989 reproduction of 1782 illustration

Jean-Jacques LeQueu

"Architecture Civile" Des Instruments a l'Usage du Bon Dessinateur 1782 Poster reproduction of heavy coated paper of original watercolor and ink drawing. 27³/₈" wide x 39¹/₄" high, Bibliotheque Nationale, Paris, copyright Edition Lidiarte 1989, Berlin.

183. Firenze Campanile.

Poster on heavy cream-colored stock reproducing in colors a design of Susanne Mocka. Copyright Edition Lidiarte, Berlin 1997. 13³/₈" wide x 39" high.

184. Rieger, Charles

Drawing of large brass lithographic compass (see item 138 in this collection) and double-sized ivory-handled ruling pen and adjustment tool (see item 52 in this collection) rendered in black and colored ink, black and colored pencil, signed with red-inked rubber stamp reading Charles Rieger, 450 West End Avenue, New York, N.Y. 10024, on heavy white paper 17" x 11" mounted within blue-gray colored card folder, together with three original photographs of Professor Rieger.

185. English, 1846

Bronze medal

A 2¹/₄" circular dark-brown oxidized bronze medal depicting on the obverse a right-facing low relief profile bust of Sir Christopher Wren with the legend *WREN*, and on the reverse a low-relief image of the front façade of St. Paul's Cathedral London with the legend *CHRISTOPHER WREN ARCHITECT MDCCX* at the top perimeter and *SI MONUMENTUM REQUIRIS CIRCUMSPICE* under the image of the cathedral, and stamped around the edge *ART – UNION OF LONDON 1846*.

186. American, 1957

Bronze medal

A 2¾" circular lightly-oxidized bronze medal commemorating the hundredth anniversary of The American Institute of Architects, the obverse centering a low relief rendition of the Institute's logo of an eagle in front of a doric column, with the legend around the perimeter reading *THE AMERICAN INSTITUTE OF ARCHITECTS 1857 – 1957*, with the reverse showing a perimeter legend of *A NEW CENTURY BECKONS* flanked by palm branches and a central low relief design that includes a pair of dividers, a micrometer, a clock, a stylized image of the planet Saturn, and four orbits around a central point, and stamped around the edge *CENTENNIAL YEAR-89TH ANNUAL CONVENTION-WASHINGTON,D.C.-MAY 14-17,1957 © SIDNEY WAUGH,SC.*

187. American, 1964

Bronze medal

A 2¾" circular lightly-oxidized bronze medal commemorating the centennial of the Columbia University School of Engineering and Applied Science and the Krumb School of Mines, the obverse centering a low relief rendition of the school's logo of crown over crossed geology hammers, with the legend around the perimeter reading *COLUMBIA UNIVERSITY SCHOOL OF ENGINEERING AND APPLIED SCIENCE CENTENNIAL*, with the reverse centering a low-relief rendition of the school's statue of a steel puddler with apron and hat, with the legend around the perimeter reading *KRUMB SCHOOL OF MINES 1864-1964*, and stamped on the edge *MEDALIC ART CO. N.Y. BRONZE.*

188. British, 1986

Bronze medal

A dark-brown oxidized bronze sculptural medal, approximately 3½" square, depicting an impressionistic image of Frank Lloyd Wright with a long prominent nose, ill-defined eyes, jowly cheeks, and a clump of hair extending to the side, designed by the American sculptor John Cook and issued by the British Art Medal Society, stamped on the reverse (in the original clay of the model) with an inscription said to be a quotation of Mr. Wright: *LIFE IS; WE ARE.*

189. CHAIR MODEL

Model of the *grande confort* armchair designed by Le Corbusier. Black resin set into a chromed bent-rod frame. 2 $\frac{1}{8}$ " wide x 2 $\frac{1}{4}$ " deep x 2 $\frac{1}{4}$ " high. Signed on the bottom in incised script:
Raine.

Series XIV: Books, Journals and Catalogues

The materials in this series are stored in Avery Library's Offsite facility. Drawings & Archives staff will arrange for items to be recalled for researchers requesting appointments to view the collection.

190. A.H. ABBOTT & CO. [trade catalogue]

Mathematical and Surveying Instruments and Drawing Materials of Every Description.

A. H. Abbott & Co., 50 Madison Street, Chicago, Fourth Edition, copyright 1896. Price 50 cents. 8vo, pp. 176, printed stiff board covers with a printed cloth spine.

191. ADAMS, GEORGE

Geometrical and Graphical Essays, containing a description of the mathematical instruments used in geometry, civil and Military Surveying, Levelling, and Perspective.

London: Printed by R. Hindmarsh for and sold by the author, 1791. First Edition. 8vo. pp. xvi (including a Preface, bibliography, errata, three pages of advertisements, and a Table of Contents), 500 (including a 15-page priced catalogue of instruments made and sold by Adams), engraved frontispiece + 32 folding engraved plates. Contemporary tree calf, rebaked with non-matching leather. Spotty foxing to frontispiece and title. Chips and tears to some of the plates.

192. A.S. ALOE COMPANY [trade catalogue]

A.S. Aloe Company, Surveying Instruments and Drawing Materials, Architects & Engineers Supplies, St. Louis.

4to, pp. (?), 212. [defective, frontmatter lacking; begins with page 3]. St. Louis, Missouri, circa 1885-1890. Flexible boards covered in black cloth with decorative silver stamping, the back showing surveying instruments and equipment.

193. THEO. ALTENEDER & SONS [trade catalogue]

Illustrated and Descriptive Catalogue and Price-List of Theo Alteneder & Sons, Manufacturers of Drawing Instruments.

Philadelphia, 939-945 Ridge Avenue, Established 1850, Forty-fifth Year, 1895. 8vo, pp. ii (title and verso), 111 (including a 2-page index), within printed stiff board covers and a cloth spine.

194. The American Neptune: Pictorial Supplement XVII *Instruments of Navigation*.

Published by the Peabody Museum, Salem, Massachusetts, 1975. 8vo, pp. 32 within printed card covers, comprising 32 one-page plates, each with one or two captioned illustrations.

195. ANDERSON, R.G.W., JOHN E. BURNETT, and BRIAN GEE

Handlist of Scientific Instruments-Makers' Trade Catalogues 1600-1914.

National Museums of Scotland in association with The Science Museum, 1990. Tall 4to (A4), pp. [4], [viii], 100, glued into printed card covers.

196. ANDRÉ, GEORGE G.

The Draughtsman's Handbook of Plan and Map Drawing Including Instructions for the Preparation of Engineering, Architectural, and Mechanical Drawings, With Numerous Illustrations and Coloured Examples.

E. & F.N. Spon. London and New York, 1891. Small 4to, pp. Plate 1, xii, 150 (including a 7-page index), Plates 2-33 (several double-page), (2). Gold- and blind-stamped blue cloth over beveled boards, brown end papers with early owner's name cut out.

197. ANTIQUITIÉS SCIENTIFIQUES [dealer catalogues]

Catalogues issued by Marc-André and Marlyse Perret of Geneva, Switzerland. Complete run from Catalogue No. 1 (1989) to Catalogue No. 11 (1995).

198. The ANTIQUARIAN SCIENTIST [dealer catalogues]

Catalogues issued by Raymond V. Giordano, trading as The Antiquarian Scientist.

199. BAYNES, KEN and FRANCIS PUGH

The Art of the Engineer

The Overlook Press, Woodstock, New York, copyright 1981 by Lund Humphries Publishers Ltd. Small folio (tall 4to?), pp. 240, including 244 illustrations in black and white and color, notes and references, and index. Gold-stamped green cloth over boards, with color-printed laminated paper dust jacket.

200. BEDINI, SILVIO A.

At the Sign of the Compass and Quadrant: The Life and Times of Anthony Lamb.

1984, The American Philosophical Society, Philadelphia. Transactions of the American Philosophical Society, Held at Philadelphia for Promoting Useful Knowledge, Volume 74, Part 1. 8vo in printed tan card covers, pp. [viii], 84. 37 illustrations, index, and a preface.

201. BEDINI, SILVIO A.

Early American Scientific Instruments and Their Makers.

1964, Museum of History and Technology, Smithsonian Institution, Washington DC. 8vo in printed tan card covers, pp. xii, 184, frontispiece plus 85 figures; includes a 21-page catalogue of The National Collection: Early American Scientific Instruments and Related Materials in the United States National Museum, Listed by Makers and Users; also a list of Surviving Wooden Surveying Compasses; also a list of mathematical practitioners and instrument makers alphabetically, geographically, and by types of instruments and their makers; also a bibliography and an index.

202. BEDINI, SILVIO A.

Thinkers and Tinkers: Early American Men of Science.

1975, Charles Scribner's Sons, New York, 8vo, pp. xix, 520; cloth-covered boards, with illustrated dust jacket; with 102 black and white text photographs and figures, and with Reference Notes, Glossary, Selected Bibliography, Acknowledgments, Illustration Credits, and Index.

203. BENNETT, JAMES A.

Le Citoyen Lenoir: Scientific instrument making in revolutionary France, A special exhibition to mark the bicentenary of the French Revolution

[exhibition catalogue] Whipple Museum of the History of Science, Cambridge, England 1989 . Tall 4to (A4) pp. 36 (unpaginated) describing and illustrating 117 items from the exhibition. A single stapled signature within color-printed card covers.

204. BENNETT, JAMES A.

The Divided Circle: A History of Instruments for Astronomy, Navigation and Surveying.

Oxford, Phaidon – Christies Limited, 1987. Tall 4to. pp. 224, including 260 illustrations (16 in color), bibliography, index of makers, index of technical terms, and general index

205. BENNETT, JAMES A.

Science at the Great Exhibition [exhibition catalogue]

Published to accompany a special exhibition at the Whipple Museum of the History of Science, Cambridge, England, 1983. Tall 4to (A4), pp. ii, 22, with illustrations, stapled within printed colored card covers.

206. BION, NICHOLAS

The Construction and Principal Uses of Mathematical Instruments, translated from the French of M. Bion, Chief Instrument-Maker to the French King, to which are added, The Construction and Uses of such Instruments as are omitted by M. Bion, particularly those invented or improved by the English. By Edmund Stone. The Second Edition. To which is added, A Supplement: containing a further Account of some of the most useful Mathematical Instruments as now improved.

Tall 4to, pp. (2), vii, (1), 325, (5), with decorative printer's devices, charts, and tables, and with 30 plates. Gold-stamped blue cloth over boards, with a black-printed red paper dust jacket. This is a 1972 facsimile reprint of the 1758 second edition of the 1723 translation by Edmund Stone (1700-1768) of the 1752 fifth edition of the French original, which was titled *Traité de la Construction et Principaux Usages des Instrument de Mathématiques* and which was first published in 1709. According to a statement on the dust jacket, this reprint is "Strictly limited to 500 copies."

208. BROWN, JOYCE

Mathematical Instrument Makers in the Grocers' Company 1688-1800

Science Museum, London 1979. 8vo, pp. xvi, 103, with 25 illustrations, a long bibliography, indices, and a Foreword by Gerard L'E. Turner. Sewn signatures glued into printed card covers.

209. CHARLES BRUNING COMPANY, INC. [trade catalogue]

General Catalog, Charles Bruning Company, Inc., BE (Direct Positive) Papers, Blue Print Papers, Special Reproduction Papers, Cloths and Machinery, Drawing and Surveying Supplies.

New York, 1939. 8vo, pp. 388, illustrated in black and white and colors with line drawings and photographs, including a photograph of Charles Bruning (1866-1931), who founded the firm in 1897. Dimensionally gold- and black-stamped maroon textured cloth over boards. With a price list inserted into a pocket in the back cover, and a folder of sample of tracing and drawing papers glued inside the front cover.

210. BRYDEN, DAVID J.

Scottish Scientific Instrument-Makers 1600-1900.

Royal Scottish Museum, Edinburgh, 1972. Tall 4to (A4), pp. x, 59, with 13 illustrations, an index, and a list of makers with addresses, stapled within printed card covers.

211. BRYDEN, DAVID J.

***Selected Exhibits in the Whipple Museum of the History of Science* [exhibition catalogue].**

Cambridge, 1978. 8vo, pp. 17, with illustrations, stapled into printed card covers. Pages 6 and 7 illustrate and describes a 1717 Italian set of mathematical and drawing instruments.

212. BURNETT, JOHN E. and ALISON D. MORRISON-LOW

"Vulgar and Mechanick" The Scientific Instrument Trade in Ireland, 1650-1921

Published by the National Museums of Scotland and the Royal Dublin Society 1989. 4to, pp. x, 166, including approximately 44 illustrations, references, notes, and an index. Gold-stamped black fabric over boards, with color-printed laminated paper dust jacket. Lists many mathematical instrument makers, who also made drawing instruments.

213. CALVERT, H.R.

Scientific Trade Cards in the Science Museum Collection

Her Majesty's Stationery Office, London 1971. Square 8vo, pp. 104.

214. C. F. CASELLA & CO. LTD. [trade catalogue]

Catalogue No. 541 Surveying and Drawing Instruments and Appliances

London n.d. [circa 1923] Tall 8vo, pp. (4), 230, bound within white-stamped paper-covered boards, with a cloth spine. Bears the bookplate and perforated ownership stamp of the Franklin Institute Library, Philadelphia.

215. CHARVOZ [trade catalogue]

Charvoz-Carsen Corporation, Fairfield, Connecticut, 1986. Catalog No. 786. 4to, pp. 112, illustrated in color throughout, glued into color-illustrated laminated-card covers, three-hole punched, with 16-page February 1, 1987 Price List laid in.

216. CLARKE, TRISTRAM N., ALISON D. MORRISON-LOW, and ALLEN D.C. SIMPSON
Brass & Glass: Scientific Instrument Making Workshops in Scotland as illustrated by instruments from the Arthur Frank Collection at the Royal Museum of Scotland.

National Museums of Scotland, 1989. Tall 4to (A4). pp. xiv, 320 including a concordance and a name index. well illustrated. Sewn signatures glued into laminated card covers. With a typescript of a review written by John R. Millburn for *Annals of Science* that has been interlineated with comments written in red ball-point pen in the hand of Mr. Millburn and sent to Andrew Alpern marked "Classified – For Your Eyes Only." At the end of the review, a manuscript list of drawing instruments descriptions of which are to be found in the book.

217. CLIFTON, GLORIA

Directory of British Scientific Instrument Makers 1550-1851

Gerald L'E. Turner is the general editor and has also contributed a foreword. Zwemmer (an imprint of Philip Wilson Publishers) in association with the National Maritime Museum 1995. Square 4to, pp. xviii, 331, including 309 illustrations, an introduction, a bibliography, an index of places, and an index of names. Gold-stamped maroon cloth over boards, with a color-printed laminated heavy paper dust jacket.

218. COHEN, I. BERNARD

Some Early Tools of American Science: An Account of the Early Scientific Instruments and Mineralogical and Biological Collections In Harvard University

With a Foreword by Samuel Eliot Morrison. 1950, reissued 1967, New York. 8vo. pp. xxii, 201, with 45 illustrations, four appendices, references and notes, and index. With 28 June 2003 obituary of the author laid in.

219. CRAWFORTH, MICHAEL

Evidence from Trade Cards for the Scientific Instrument Industry

Offprint of article first published in ANNALS OF SCIENCE, 42 (1985), 453-544. 8vo, pp. 92 including 65 illustrations, within printed card covers. Laid in are additional illustrations of trade cards taken from auction catalogues.

220. F. DARNAY [trade catalogue]

Le Bureau de Dessin Moderne

Paris, circa 1930. 4to, pp. 32, illustrated, within printed paper covers.

221. DAUMAS, MAURICE [Mary Holbrook, translator and editor]

Scientific Instruments of the Seventeenth and Eighteenth Centuries and their Makers

B.T. Batsford, London, 1972. Large 8vo, pp. vi, 361, including 142 black and white plates and 11 text figures, references, bibliography, and index. Gold-stamped black cloth over boards, with color-printed laminated paper dust jacket.

222. DEFIANCE SALES CORPORATION

General Catalogue, Drawing Materials, Architects and Engineers Supplies

New York, 1955. 8vo, pp. 336 (including 4-page index), boards, covered in textured blue cloth dimensionally stamped in white and gold, illustrated throughout with black and white line drawings and photographs, including an artist's rendering of "Our Barrowsville, Massachusetts Plant." Vacant pocket in the back cover for a price list

223. F.W. DEVOE & CO. [trade catalogue]

Priced Catalogue of Surveying and Mathematical Instruments and Drawing Materials for Engineers, Surveyors, Architects, Draughtsmen, Railroad Construction, and for Scientific and Technical Schools. Manufactured and Imported by F.W. Devoe & Co., Corner Fulton and William Streets, New York. [1882]. Square 8vo, pp. (7), 264 (including 5-page index), illustrated throughout with line cuts, with an elaborate steel-plate engraving as a frontispiece, signed by the American Bank Note Company, New York, and with views of the firm's store at the corner of Fulton and Williams Streets and its factories on Horatio and Jane Streets, the first building of which was erected in 1852. Green cloth-covered beveled board covers, decoratively stamped in red, silver, and gold, with decorative endpapers and a tissue guard to the engraving. With a copy of a photograph of the firm's store building and a copy of one of the firm's advertisements laid

224. *Dictionary of British Scientific Instruments*

Interbook International B.V., Scheidam 1976. 8vo, pp. xvi, 334, including 313 illustrations. Gold-stamped brown cloth over boards, with printed paper dust jacket.

225. EUGENE DIETZGEN CO. [trade catalogue]

Catalogue & Price List of Eugene Dietzgen & Co., Manufacturers of Drawing Materials and Surveying Instruments.

Chicago, 1910, Ninth Edition, Price 50 Cents. 12mo, pp. ii (title and verso), 555 (including 19 pages of books for sale, plus a 13-page index) (16 pages of one early signature unintentionally blank), bound within printed stiff paper board covers and a printed cloth spine (faded). The title page lists the addresses of the firm's stores in Chicago, New York, San Francisco, New Orleans, Pittsburg, and Toronto, and notes that its principal factory is in Chicago.

226. EUGENE DIETZGEN CO.

Use & Care of Drawing Instruments with Instructive Exercises.

Chicago, 1930, 8vo, pp. 24, stapled within printed colored heavy paper covers.

227. EUGENE DIETZGEN & CO. [trade catalogue]

Catalogue of Eugene Dietzgen Co. Manufacturers Blue Print Papers, Drafting Room Supplies, Surveying Instruments and Accessories, Measuring Tapes.

Chicago, 1931 Fourteenth Edition, 8vo, pp. viii (including renderings and photographs of the firm's factory and five of its retail stores and a preface), 520 (including six pages of listings for books and a 14-page index), within decorative green cloth covered boards, with a 48-page Price List No. 17 dated Feb. 1935 slipped into pocket inside the back cover, and a brochure of small samples of 20 "Drawing and Tracing Papers and Samples of Stock Used for Our Profile and Cross Section Papers" glued onto the inside of the front cover.

228. EUGENE DIETZGEN & CO. [trade catalogue]

Dietzgen Drafting Instruments, Equipment and Supplies, Catalog 22D.

Chicago, 1960, 8vo, pp. 220, stapled within color printed card covers, with 16-page price list No. 22D Effective May, 1960, laid in.

229. DIETZGEN CORPORATION [trade catalogue]

Dietzgen Drafting Equipment, Supplies and Furniture Catalog 2.

Chicago, [1976], 4to, pp. 56, printed in two colors and stapled within card covers printed in three colors, three-hole punched, with one-page [updated] list of offices and form letter laid in.

230. DIETZGEN CORPORATION [trade catalogue]

1976 Educational Edition Dietzgen Drafting Equipment, Supplies and Furniture Catalog 4.

Chicago, [1976], 4to, pp. 56, plus ordering form, printed in two colors and stapled within card covers printed in three colors, three-hole punched, with two copies of a 16-page price list, a one-page [updated] list of offices, and a form letter laid in.

231. B.K. ELLIOTT CO. [trade catalogue]

Catalogue and Price List, Fifth Edition, of B.K. Elliott Co., Manufacturers and Importers of Drawing Materials and Surveying Instruments.

Pittsburgh, Pa., [?1929], 8vo, pp. 349 (including five pages of books for sale and a six-page index), textured orange cloth over boards, with black stamping, with many black and white photographs and text figures, with *Changes in Prices and Specifications Fifth Edition B.K. Elliott Co. Catalog* laid in, along with a perforated sheet of 26 unused gummed labels reading "See Supplement in back of Book for changes in price and description."

232. FOX, PHILIP

Adler Planetarium and Astronomical Museum: An Account of the Optical Planetarium and a Brief Guide to the Museum

Chicago, June 1933. 8vo, pp. 61, with 69 illustrations.

233. The GEMMARY [dealer catalogues]

Catalogues issued by Rick Blankenhorn, trading as The Gemmary. Instrument Catalogues Numbers I (1989), III through XII; book catalogue XXIII.

234. GURLEY, W. & L.E.

A Manual of the Principal Instruments used in American Engineering and Surveying

Twenty-fifth Edition, 1884, published by W. & L.E. Gurley, Troy, N.Y. small 8vo, engraved frontispiece, pp. 331, consisting of a price list of surveying equipment, an illustrated manual of surveying instruments, a set of traverse tables, an illustrated catalogue of drawing instruments and materials, a priced listing of books, a table of contents, and ancillary information.

235. HALL, HARDING LTD. [trade catalogue]

Drawing Office Equipment: Adjustable Tables, Drawing Boards, Cabinets, Stools, etc. etc Catalogue Section No. 4.

Hall, Harding Ltd, Stourton House, Dacre Street, London S.W. 1., [circa 1946] 8vo, pp. 40, stapled into card covers, with a small price list dated March 1946 slipped into a pocket inside the back cover.

236. HAMBLY, MAYA

*Drawing Instruments, Their History, Purpose and Use for Architectural Drawings, Exhibition
11 November – 18 December 1982*

RIBA Drawings Collection, London, 1982. Square 8vo, pp. 60, printed card covers. Illustrated throughout with black and white photographs and line drawings.

237. HAMBLY, MAYA

Drawing Instruments 1590-1980

Published for Sotheby's Publications by Philip Wilson Publishers Ltd, London, 1988. Small 4to, pp. 206 (including a 6-page index), with 175 black and white illustrations and 19 color plates. Gold-stamped and textured gray paper over boards, with pictorial endpapers reproducing an old engraving of drawing instruments, and with a color-printed dust jacket. Numerous cuttings laid in.

238. HAMBLY, MAYA

Les Instruments de Dessin 1580-1980

A French translation by Dominique Bauthier of the previous book, published in 1991 in Paris by Ars Mundi. 4to, pp. 206 (including a 5-page index), with 175 black and white illustrations and 19 color plates. Black-stamped pale green paper over boards with a color-printed dust jacket.

239. HAWKINS, N. *Self-Help Mechanical Drawing, an Educational Treatise*

Theo. Audel & Co., New York, 1902, Oblong 4to, pp. 299 (including a 17-page index), 17 (book catalogue, with pp 5/6 out of sequence), very dark blue cloth over beveled boards with gold stamping, t.e.g. Illustrated throughout with black and white line cuts.

240. HEATHER, J. F.

A Treatise on Mathematical Instruments: their Construction, Adjustment, Testing, and Use, Concisely Explained.

London, Virtue Brothers & Co., 1866, Eighth Edition, small 8vo, pp. vi, 185 (including index), 12 (instrument catalogue of Elliott Brothers), 12 (book catalogue of Virtue & Co.); embossed cloth-covered flexible card covers with excerpts from the publisher's book catalogue as end papers; with many black and white text figures.

241. HISTORICAL TECHNOLOGY, INC. [dealer catalogues]

Catalogs 101 to 130, Fall 1970 to Spring 1987

Catalogs issued by Saul Moskowitz, trading as Historical Technology, Inc., 6 Mugford Street, Marblehead, Massachusetts 01945. Three 4to volumes, each published successively by Mr. Moskowitz as a compilation of ten of his already-issued catalogs, each volume bound in gold-stamped red cloth over boards. Together with Catalogs 131-134 and a special catalog of American instruments issued in honor of the country's bicentennial in 1976. Catalogue 134 was the last one issued. On 13 August 1991, Saul Moskowitz was hit by a car while riding his bicycle; he was 57. His remaining stock in trade was sold at Christie's South Kensington, London on 18 June 1992.

242. HODGSON FRED T.

Builders' Architectural Drawing Self-Taught

Copyright 1917, 1916 and 1903 by Frederick J. Drake & Co., Chicago, Ill. Small 8vo, pp. 278, 47 (advertisements for plans and specifications of houses, showing exterior renderings and small-scale dimensioned floor plans), 10 (index). Includes 252 black and white text figures, 18 fold-out plates, and 149 test questions, bound in light blue cloth-covered boards with black stamping.

243. HOLBROOK, MARY

Science Preserved: A directory of scientific instruments in collections in the United Kingdom and Eire.

London 1992. 4to, pp. [ii], 271, including 139 black and white photographic illustrations, index of names, and index of instruments. Gold-stamped black cloth over boards, with color-printed laminated paper dust jacket. Prospectus laid in.

244. HULME, F. EDWARD

Mathematical Drawing Instruments and How to Use Them

1879, Trübner & Co., Ludgate Hill, London. Small 8vo, pp. xv, 152, bound in boards covered in brown cloth, stamped in gold and black, with a gold-stamped protractor and title on the front cover and "The Young Mechanic Series" stamped in black, with brown end papers.

245. HULME, F. EDWARD

Mathematical Drawing Instruments and How to Use Them

Sixth Edition, 1895, Kegan Paul, Trench, Trübner & Co. L^{TD}, Charing Cross Road, London. Small 8vo, pp. xv, 152, with an advertisement for books as a frontispiece, bound in boards covered in blue cloth, stamped in gold, red, and black, with a gold-stamped protractor and title on the front cover, with yellowed (once white) end papers, and with clippings of relevant mathematical examples pasted onto the front end papers.

246. *L'Industrie Française des Instruments de Précision, Catalogue publié par le Syndicat des Constructeurs en Instruments d'Opitque & de Précision.*

1980 reprint by Alain Brioux of the 1901-1902 original. 8vo, pp. (10), xxxiv, 271, gold-stamped brown cloth over boards with large decorated printed paper titled label on the front.

247. INSTRUMENTS (1951) LIMITED

Established 1907 Catalogue No. 57 Instruments & Supplies for Surveyors, Engineers, Architects & Draughtsmen. Photogrammetric & Meteorological Instruments, Blue and Direct Process Papers, Cloths & Films.

Ottawa, Ontario, Canada. n.d. [1960] 8vo, pp. 440 (including 11-page index), in boards covered in pale orange-colored cloth printed in black and dark orange. With a 48-page price list dated December 1960 inserted into a pocket inside the back cover. Book and price list rubber-stamped *Property of Quebec North Shore and Labrador Railway* within an oval.

248. KEUFFEL & ESSER [trade catalogue]

1876 (reduced size facsimile reprint issued in 1967 on the occasion of the company's centennial). This facsimile reprint 24mo is in photo-facsimile printed card covers, pp. 122, with index, fully illustrated and priced throughout.

249. KEUFFEL & ESSER [trade catalogue]

Illustrated and Descriptive Catalogue and Price List of Drawing Papers, Mathematical Instruments, Hard Rubber Drawing-Tools, Scales, Curves, Tapes, T Square and Artists Materials of Every Kind, of Keuffel And Esser

1878. Twelfth Edition, New York (printed address is Fulton Street Late No. 111, rubber-stamped over in red ink reading 127 Fulton & 42 Ann Streets). 8vo in color-printed heavy paper covers, pp. 144 with an extra page printed on light green paper pasted in following page 140, advertising Soennecken's new *Fluent Writing Pens* and *F. Soennecken's Methodical Text Book of Round Writing*.

250. KEUFFEL & ESSER CO. [trade catalogue]

Catalogue and Price List of Keuffel & Esser Co., Manufacturers and Importers of Drawing Materials and Surveying Instruments

1900-1901. 30th Edition, New York. 12mo with rounded corners in printed card covers, pp. x, 482, illustrated throughout with line cuts of the products on offer and at the front with photographs of the company's facilities, and with a long list at the end of books for sale, plus an index.

251. KEUFFEL & ESSER CO. [trade catalogue]

Catalogue of Keuffel & Esser Co, Manufacturers and Importers Drawing Materials, Surveying Instruments, Measuring Tapes

1913. 34th Edition, New York. 8vo with rounded corners bound within decoratively black-stamped orange cloth over flexible boards, pp. viii, 566, illustrated throughout with line cuts in black and white and colors of the products on offer, with photographs of the company's facilities at the front, with the title page and four section divider pages printed in colors on heavy coated stock, and with a long list at the end of books for sale, plus an index.

252. KEUFFEL & ESSER CO. [trade catalogue]

Catalogue of Keuffel & Esser Co, Manufacturers and Importers Drawing Materials, Surveying Instruments, Measuring Tapes

1915. 35th Edition, New York. 8vo with rounded corners bound within decoratively black-stamped orange cloth over flexible boards, pp. xiv, 566, illustrated throughout with line cuts in black and white and colors of the products on offer, with photographs of the company's facilities at the front, with the title page and two section divider pages printed in colors on heavy coated stock, and with a long list at the end of books for sale, plus an index.

253. KEUFFEL & ESSER CO.

[trade catalogue]

Catalogue of Keuffel & Esser Co, Manufacturers and Importers Drawing Materials, Surveying Instruments, Measuring Tapes

1921, 36th Edition, New York. 8vo with square corners bound within decoratively and dimensionally black- and gold-stamped maroon cloth over boards, pp. x, 482, illustrated throughout with line cuts in black and white and some colors of the products on offer, with photographs of the company's facilities at the front, with the title page printed in colors on heavy coated stock, with a one-page list at the end of books for sale, plus a product index and a number index, and in a pocket inside the back cover, a 36th edition price list dated September 1, 1922 that includes at the back new items since the publication in 1921 of the 36th edition of the catalogue.

254. KEUFFEL & ESSER CO. [trade catalogue]

K+E Catalog 42nd Edition

1954, New York. 8vo in two volumes bound within printed card covers; Vol 1, pp. [iv], 293, [1], index numbered 295-300; Vol 2, pp. [3], then pagination continues from volume 1 at p. 294 and ends at 470 (page 469 misprinted as following 470); illustrated throughout with line cuts in black and white and colors of the products on offer; a separate index at the end of each volume covering only that volume.

255. KEUFFEL & ESSER CO. [trade catalogue]

Letter-size gold-stamped green three-hole binder containing Catalog 1, Drafting Media, 1966, pp.19; Catalog 5, Drawing Instruments and Drafting Supplies, 1966, pp. 55; Catalog 6, Drafting Machines, Lettering Equipment, and Mathematical Instruments, 1967, pp. 51; Catalog 11, Field Equipment, 1962, pp. 31; Catalog 12, Measuring Tapes, 1962, pp. 31; and Hamilton Drafting Room Equipment (sold by K&E), undated [circa 1962?], pp. 38. All catalogues 11 x 8.5 inches, illustrated with line drawings and photographs, some color.

256. KEUFFEL & ESSER CO.

Partners in Creating / The First Century of K+E 1867 / 1967

1967, New York. Square 4to, pp. 36 stapled into printed card covers. A commemorative centennial celebration and brief history of the firm. With various ephemera laid in.

257. KEUFFEL & ESSER CO. [trade catalogue]

Selected Products Catalog

1975, 4to, pp. 64 stapled as a single signature within printed card covers, with an 8-page three-hole punched price list dated May 1975 laid in. Also laid in is a folder advertising Crystalene tracing paper, with four sample sheets included, along with a business card of a sales representative showing an address of company store at 40 East 43rd Street.

258. KIELY, EDMOND R.

Surveying Instruments: Their History

Copyright 1947 by The National Council of Teachers of Mathematics, Inc., n.p., copyright 1979 by Carben Surveying Reprints, Columbus, Ohio. 8vo, pp. xi (including author's preface and reprint preface), 273 (including 20-page bibliography and 15-page index, with 151 text figures plus frontispiece and second frontispiece to the bibliography), gold-stamped textured red cloth over boards.

259. KOH-I-NOOR CATALOG 77-78 [trade catalogue]

Published by Koh-I-Noor Rapidograph Inc., Bloomsbury, New Jersey. 4to, three-hole punched, pp. 112. Pasted on the front cover is the label of Carl Heinrich Company, Surveying Equipment, 711 Concord Avenue, Cambridge, Mass 02138. Laid in is a 15-page Retail Price List Effective April 1, 1978 for use with Catalog 77-78.

260. KOLESCH & CO. [trade catalogue]

Illustrated Catalogue and Price-List of Drawing and Tracing Papers, Sun Print Papers and Equipment, Drawing Instruments and Materials, Surveying Instruments, Accessories, etc.
Kolesch & Co. Established 1885, 138 Fulton Street near Broadway, New York

Eleventh Edition Price 50 Cents, 1917. 8vo, pp. 336 (including 12 pages of books for sale and a 10-page index, with many black and white text figures and a few photographs). A "Trade Discount Sheet Applying to Eleventh Edition" dated September 15th, 1917 laid in. Gray cloth over boards, with black stamping.

261. KOLESCH & CO. [trade catalogue]

Illustrated Catalogue and Price-List of Drawing and Tracing Papers, Sun Print Papers and Equipment, Drawing Instruments and Materials, Surveying Instruments, Accessories, etc.
Kolesch & Co. Established 1885, 138 Fulton Street near Broadway, New York

Fourteenth Edition Price 50 Cents, 1932. 8vo, pp. 336 (including 12 pages of books for sale and a 10-page index, with many black and white text figures, and with pocket inside the back cover for a price list, not present). Yellow cloth over boards, with black stamping.

262. MARTIN, BENJAMIN

The Description and Use of a Case of Mathematical Instruments; particularly Of all the Lines contained on the Plain Scale, the Sector, the Gunter, and the Proportional Compasses. With A Practical Application exemplified in many useful Cases of Geometry, and Plain and Spherical Trigonometry.

London: Printed for, and sold by the Author, at his Shop in Fleet-street, No. 171, and by the Booksellers in City and Country. A.D. 1771. [Price Six-Pence]. First Edition. 8vo. pp. ii (including a title page and a Preface), 18 (including a small advertisement at the foot of the final page), a single folding engraved plate serving as a frontispiece, which shows 12 figures that are referenced in the text. Bound into modern paper-wrapped boards, the front paste-down end paper with a pictorial bookplate bearing the inscription *From the Scientific Library of John Richard Millburn* and a woodcut rebus showing a stone mill and stream (or burn).

263. MARTIN, BENJAMIN

An Appendix to the New Art of Surveying; containing A New Construction of a Pantograph. Which renders it of universal Use in reducing or enlarging Plans, Drawings, Pictures, Portraits, &c. in Copies bearing any required Proportion to the Original.

London. Printed for, and sold by the Author, No. 171, Fleet-Street. Circa 1775, 8vo. Contents: Title with Preface verso, text 1-13, advertisement [14]. Accompanied by an engraved plate, 7 $\frac{3}{4}$ " x 6 $\frac{7}{8}$ ", containing two figures, titled *The Universal Pantograph Invented & Made by B. Martin, London*, which is signed by the engraver, *W.Whitecurch, sculpsit*.

264. WILLIAM Y. McALLISTER [trade catalogue]

A Priced and Illustrated Catalogue of Mathematical Instruments, Surveying Instruments, Transits, Levels and Drawing Materials, Manufactured, Imported, and Sold Wholesale and Retail by William Y. McAllister

53rd Edition, Part Second, 1881 Philadelphia. 8vo, pp. 88, stapled within printed paper covers. Illustrated throughout with many black and white line cuts. Includes priced list of Scientific Books and two-page index. "Established in 1783" appears at the top of the title page and at the top of the back cover.

265. McCONNELL, ANITA

Instrument Makers to the World: A History of Cooke, Troughton & Simms

1992 William Sessions Limited, York, England. Square 8vo within color-printed card covers, pp. xii, 116, with approximately 101 illustrations, Further Reading and Notes to the Text (by chapter), and an index. With publisher's prospectus, two reviews, correspondence, and related ephemera laid in.

266. McCONNELL, ANITA

R B Bate of the Poultry 1782-1847: The Life and Times of a Scientific Instrument Maker

1993, Scientific Instrument Society. 8vo, pp. xiii, 74, including 14 illustrations, a family tree, a list of publications, and an index, within color-printed laminated card covers.

267. MICHEL, HENRI

Instruments des Sciences dans l'art et l'histoire

Rhode-St-Genèse Belgium 1980 reprint of 1966 original. 4to, pp. 206, including 104 color plates plus various black and white text figures, and indices. Gold-stamped linen cloth over boards, with color-printed laminated paper dust jacket.

268. MICHEL, HENRI [translated by R.E.W. and Francis Maddison]

Scientific Instruments in Art and History

Barrie and Rockliff, London 1967 4to, pp. 208, including 104 color plates plus various black and white text figures, bibliography, and index. Gold-stamped linen cloth over boards. Ex-lib.

269. MILLBURN, JOHN RICHARD

Adams of Fleet Street, Instrument Makers to King George III

Published by Ashgate Publishing Limited for the Museum of the History of Science, Oxford, with the support of the Scientific Instrument Society, London, 2000. 8vo, pp. xix, (3), 420, within gold-stamped textured black paper over boards, with printed black paper dust jacket. Includes about 150 black and white illustrations, maps, plans, and charts. Appendices include a transcription of George Adams Senior's instrument catalogue of 1766, a facsimile reprint of George Adams Junior's last instrument catalogue of 1795, aids to dating Adams instruments

and publications, a short-title list of publications by the Adams family, a 7-page bibliography, and a 14-page index.

270. MILLBURN, JOHN RICHARD

Benjamin Martin, Author, Instrument-Maker, and 'Country Showman'

Noordhoff International Publishing, Leyden, The Netherlands, 1976. Number 2 of the publisher's Science in History Series. 8vo, pp. xii, 244, includes 7 text figures and 8 plates, appendices, and index, white-stamped black cloth over boards, with greenish-gray printed paper dust jacket.

271. MILLBURN, JOHN RICHARD

Benjamin Martin, Author, Instrument-Maker, and 'Country Showman' Supplement

Vade-Mecum Press, London, 1986. 8vo, pp. 64, with 6 plates and index, bound within tan printed card covers. The verso of the title page bears the statement: This Supplement has been published in a limited edition of 500 copies.

272. MILLBURN, JOHN RICHARD

Retailer of the Sciences, Benjamin Martin's Scientific Instrument Catalogues, 1756-82

Vade-Mecum Press, London, 1986. 8vo, pp. 95, with 51 figures, a description of the 1782 auction sale of Martin's stock-in-trade, and an index, bound in laminated light-green decorative printed paper over boards. Verso of title page notes "This edition limited to 500 copies."

273. MILLBURN, JOHN RICHARD

An Annotated Bibliography of Benjamin Martin (1704/5 – 1782) [Abstract]

Compiled and printed (via Canon word processor and bubble-jet printer) by the Author, Aylesbury, Bucks., England, 1997. Tall 4to (A4) pp. 48, plus three later additional pages laid in, within commercial blue wrapper.

274. MILLBURN, JOHN RICHARD

The Country Showman Or The Newsletter of the Benjamin Martin Appreciation Society

Privately published by the author, Aylesbury, Bucks., England, 1997-2004. Complete run, all on A4 yellow paper, stapled, except as noted. Prospectus, single-sided pink sheet; Numbers 1 and 2, December 1997 and December 1998, each 6 pages, single column with plain masthead; Number 3, December 1999, single column with new illustrated masthead, 6 pages; Number 4, December 2000, double columns, 6 pages; Number 5, December 2001, Number 6, December 2002, 8 pages; Number 7, December 2003, 6 pages; Number 8, December 2004, 8 pages on white paper; Contents and Index of Issues 1-3 on yellow paper; Cumulative Contents and Index of Issues 1-8 on white paper; all within a tan folder.

275. MILLBURN, JOHN RICHARD, in collaboration with Henry C. King

Wheelwright to the Heavens: The Life & Work of James Ferguson, FRS

1988, Vade-Mecum Press, London. 8vo in gold-stamped cloth-covered boards within a two-color printed laminated-paper dust jacket, with a map covering both front and back endpapers depicting the London of Ferguson's time, with pertinent places numbered and keyed to Appendix II, pp. xii, 328, including a frontispiece and 59 illustrations, 17 chapters, 8 appendices, notes and references, and an index. Laid in are the one-page publishers prospectus, a review of the book by Andrew Alpern that appeared in *History of Science*, Volume 29, Part 3, Number 85, September 1981, a list of places where reviews appeared, and a photocopy of an article about Ferguson taken from the Bulletin of the Scientific Instrument Society No. 77 (2003).

276. MORRISON-LOW, A. D.

Making Scientific Instruments in the Industrial Revolution

2007, Ashgate Publishing Limited and the National Museums of Scotland. 8vo, pp. xvi + 408; includes 66 illustrations, 9 graphs, 6 tables, 53-page appendix listing makers of instruments (including drawing instruments), 43-page bibliography, and 14-page index. 2007.020.

277. PEARSALL RONALD

Collecting and Restoring Scientific Instruments

1974, David & Charles, London. 8vo in gold-stamped textured blue paper over boards within a color-printed paper dust jacket, pp. 278, including 127 illustrations, chapters on the materials and manufacture of instruments, and on their cleaning and restoration, a glossary, lists of makers, and an index.

278. PIKE, BENJAMIN Jr.

Pike's Illustrated Catalogue of Scientific & Medical Instruments.

A 1984 facsimile reprint in one volume of the 1856 enlarged second edition of the two 1848 volumes of *Pike's Illustrated Descriptive Catalogue of Optical, Mathematical, and Philosophical Instruments*. 8vo, 2 vols in one, pp. xv (including a new Introduction by Deborah Jean Warner, Smithsonian Institution), 389, 287, 78 (a new index), with over 1500 woodcut illustrations; gold-stamped blue cloth over boards. An edition limited to 400 copies. Laid in are photos of the etched glass of the front doors to Benjamin Pike's 1856 house (now known as the Steinway Mansion) in Astoria, Queens, New York, showing some of the scientific instruments whose sale profits helped to finance the construction of the house.

279. Pike/Steinway House

A folder of materials, including:

- Abstract of the Title of Steinway & Sons to Property at Long Island City [from 1722 to 1878, with map]
- Exterior grading and paving plan dated February 1967, Arnold R. Kline, Consulting Engineer
- Feasibility Study drawings for conversion of house to club/restaurant, undated, Leslie Malcolm Good, Architect.
- Construction drawings (multiple copies) dated August 1975 for alterations to the house showing existing and new work, Ernest Bitzer, Architect.
- Brochure about the house, dated February 4, 1984
- *The Pike Project: A Proposal to Restore and Preserve the Pike/Steinway/Halberian Mansion*, by Andrew Alpern, dated May 22, 1989
- Landmark Designation Report (one page) for the house, dated February 15, 1967
- Duplicate Department of Buildings application dated August 26, 1975 covering alterations to the house.
- A quantity of photographs of the house.
- A quantity of articles related to the house.
- A quantity of correspondence concerning the house.

280. PORTER, ROY, JAMES BENNETT, SIMON SCHAFFER, and OLIVIA BROWN

Science and Profit in 18th-Century London

Published to accompany a special exhibition at the Whipple Museum of the History of Science [exhibition catalogue]. Cambridge, England, 1985. Tall 4to (A4), pp. [ii], 40, including illustrations, stapled within printed card covers. Four essays, followed by a catalogue of the exhibition and a bibliography and list of references.

281. THE FREDERICK POST CO. [trade catalogue]

Posts Catalog of Dependable Drawing Materials Equipment and Supplies, Engineering Instruments and Blue Print Papers for Draftsmen, Architects, Engineers and Technical Schools

16th Edition, 1930, The Frederick Post Co., Chicago. 8vo, pp. 327 (including three pages of books for sale and a three-page index), with many black and white text figures, and with a pocket inside the back cover for a price list, not present. Light blue cloth over thin boards, with black stamping.

282. POULLE, EMMANUEL *Les Instrument Astronomiques du Moyen Age*

1983 48, rue Jacob, Paris, copyright Alain Brioux and Emmanuel Poulle. 8vo within printed card covers, pp. 44 with 19 illustrations.

283. JAMES W. QUEEN & CO.

***The Queen Catalogues* [trade catalogues]**

1887-1890, Philadelphia (1993, San Francisco, facsimile reprint). 8vo within gold-stamped blue cloth over boards, 2 vols, about 832 pp each, with about 3300 text figures in each volume.

Reprints of 17 different catalogues of the important importer, manufacturer, and dealer James W. Queen & Co., of Philadelphia, with an new introduction by Deborah Jean Warner, Curator of Physical Sciences, National Museum of American History, Smithsonian Institution, Washington D.C.

284. RICE, HOWARD C., Jr.

The Rittenhouse Orrery: Princeton's Eighteenth Century Planetarium, 1767-1954, a Commentary on an Exhibition held at the Princeton University Library.

Princeton University Library, 1954. 8vo, pp. xii, 88, with 16 illustrations. cloth-covered boards. With a letter dated 20 May 1954 from the Friends of the Princeton Library and a prospectus laid in (indicating that 1000 copies of the book were printed).

285. E. O. RICHTER & CO [trade catalogue]

Catalogue of E. O. Richter & Co. Chemnitz, Germany, Manufacturers of Drawing and Lithographing Instruments.

Chemnitz, Germany, 1926, 5th Edition; 8vo, 129 pages bound into printed textured purple-colored stiff paper covers, illustrated with many photographs, and with a 24-page price list laid in; both bearing the stamped number 552 and the stamp of the [presumed] agent, John Henschel & Co., Inc., 298 Fifth Avenue, New York City. The notice page at the front states, "We strictly sell to dealers only."

286. RIGHINI BONELLI, M.L., and T. SETTLE

The Antique Instruments of the Museum of History of Science in Florence

Undated [circa 1984?], Arnaud. square 12mo. pp. 170, with index of names. Card covers, with color illustration on the front.

207. RIGHINI BONELLI, MARIA LOUISA

Il Museo di Storia Della Scienza a Firenze

Electa Editrice, Milano, 1968 Small 4to, pp. 251, including 143 plates in color and black and white, index of names, index of illustrations, and general index. Bound in printed paper over boards.

287. RITTENHOUSE: Journal of the American Scientific Instrument Enterprise [professional journal]

Issue 1 to Issue 65, complete; 2006.006. Vol. 19, no. 2 and Vol. 20, no. 1.; 2007.020.

Published jointly by David & Yola Coffeen, Tesseract, and Raymond V. Giordano, The Antiquarian Scientist.

288. ROBERTSON, JOHN

A Treatise of Such Mathematical Instruments as are usually put into a Portable Case:

Containing their various Uses in Arithmetic, Geometry, Trigonometry, Architecture, Surveying, &c. &c. Designed for the Benefit of Engineers, Architects, Surveyors, and for Young Students of Mathematics. To which is prefixed, A Short Account of the Authors who have treated on the Proportional Compasses and Sector. By J. Robertson, F.R.S.

1747, first edition, London, printed for T. Heath, Mathematical Instrument Maker. small 8vo, folding frontispiece, title pp. 2, xxiii, errata, 107, with many decorative printer's devices, with six additional folding plates, and with tables and diagrams. Contemporary light brown calf over boards, skillfully rebaked in matching leather.

289. ROBERTSON, JOHN

A Treatise of such Mathematical Instruments as are usually put into a Portable Case. Showing some of their Uses in Arithmetic, Geometry, Trigonometry, Spherics, Architecture, Surveying, Geography, Perspective, &c. With an Appendix; containing the Description and Use of Gunners Callipers. And the Description of, and Precepts of the Delineation of, Ship-Guns and Sea Mortars. To this Treatise is prefixed A Brief Account of Authors, who have wrote on the Proportional Compasses and Sector. The Third Edition, with many Additions. By John Robertson, Librarian to the Royal Society.

1775, third edition, London, printed for J. Nourse, Bookseller to His Majesty, in the Strand. small 8vo, folding frontispiece, pp. xxiii, (1), 233, (3 (a catalogue of books printed for J. Nourse)), and with eleven additional folding plates, and with tables and diagrams. Contemporary calf, gilt paneled spine, scuffs and wear, otherwise tight, the front paste-down end paper with a pictorial bookplate bearing the inscription *From the Scientific Library of John Richard Millburn* and a woodcut rebus showing a stone mill and stream (or burn).

290. SCIENTIFIC INSTRUMENT SOCIETY [professional journal]

Complete run of the Bulletins. No. 1 (two copies) to No. 88; 2006.006. Nos. 89-93; 2007.020.

Published four times a year by the Scientific Instrument Society of England.

291. SCOTT-SCOTT, MICHAEL

Drawing Instruments 1850-1950.

Shire Publications, Ltd., Princes Risborough, Aylesbury, Bucks HP17 9AJ, U.K. 1986. 8vo, pp. 32 stapled within color-printed card covers, illustrated with 55 black and white photographs.

292. SIMS, F.W.

A Treatise on the Principal Mathematical and Drawing Instruments Employed by the Engineer, Architect, and Surveyor, Third Edition with a Description of the Theodolite together with Instruction in Field Work

1847, John Weale, Architectural Library, 59 High Holborn, London, small 8vo, pp. xi, 146, 6 (catalogue of mathematical and drawing instruments, and list of engines, machines, and tools, manufactured by Edward Marmaduke Clarke), brown cloth over boards, blind- and gold-stamped.

293. SMART, CHARLES E.

The Makers of Surveying Instruments in America Since 1700

Volume One: 1962, Troy, New York, 8vo, pp. xxiv, 182 (including bibliography), tan cloth over boards, with red stamping. Volume Two: 1967, pagination continuing from Volume One, thus: xxv-xxvi, 183-282, including index to both volumes, textured red cloth over boards, with gold stamping. Laid in is correspondence between this collector and Mrs. Gillett concerning these books.

294. W. F. STANLEY & CO. L^{TD} [trade catalogue]

Catalogue of W.F. Stanley & Co. Limited. Manufacturers of Surveying, Mathematical, Drawing, Optical, Nautical & Meteorological Instruments, and Drawing Office Stationers and Furnishers. Established 1853.

Small 8vo 1927 Thirty-first "M" Edition, Abridged – Copyright. pp. 404, sewn and glued into purple printed paper covers, with rounded corners, illustrated throughout with black and white line cuts including illustrations of the firm's shops, factories and workshops.

295. [W.F. STANLEY & CO. L^{TD}] ALLEN, CECIL J.

A Century of Scientific Instrument Making 1853-1953

Published for W.F. Stanley & Co., Ltd by Harley Publishing Co., Ltd., London, 1953. 4to, pp. 64, gold-stamped maroon cloth over boards, with maroon-printed light green paper dust jacket. A history of the important Stanley instrument making firm, which includes photographs, chronology, and listing of directors.

296. STANLEY, WILLIAM FORD

A Descriptive Treatise on Mathematical Drawing Instruments their Construction, Uses, Qualities, Selection, Presentation, and Suggestions for Improvement; with Hints Upon Drawing and Colouring.

London, Published by the Author, 1866. Price Five Shillings. 12mo, in cloth-covered boards; pp. xii (including a Preface), 243 (including an index and a Price List of the Instruments Described, made by the Author and Sold at 5, Great Turnstile, Holborn, London, W.C.), with many illustrative line drawings within the text.

297. SUTCLIFFE, G. LISTER (Editor), and UNDERHILL, ROY (Consultant)

Compendium of Drawing and Drawing Instruments

1990 reprint by the National Historical Society of Section IV, Drawing and Drawing-Instruments, and Section V, Practical Geometry, from Volume III of the 1902 multi-volume series, *The Modern Carpenter Joiner and Cabinet-Maker*. 4to, pp. xii, (195-295), with many black and white line drawings and four color plates and two black and white plates. Gold-stamped brown and green cloth over boards.

298. TAYLOR, E.G.R. [EVA GERMAINE RIMINGTON]

The Mathematical Practitioners of Hanoverian England 1714-1840

1966, Cambridge University Press for the Institute of Navigation. 8vo, in gold-stamped red-cloth covered boards with a printed heavy paper dust jacket, pp. xvi, 503, with 12 plates and two indices, a foreword, a preface, a narrative in eight chapters of science, scientific instruments, and their makers in England, from 1714 to 1840, and short biographies of the instrument makers of that period, arranged chronologically. Laid in is a pink-paper stapled 23-page index, compiled by Kate Bostock, Susan Hurt, and Michael Hurt, and published in 1980 by Harriet Wynter Ltd, London. Also laid in is photocopy of a three-page article by Peter de Clercq about Professor Taylor and her two volumes on mathematical practitioners, which appeared in The Bulletin of the Scientific Instrument Society No. 81 (2004).

299. TAYLOR, E.G.R. [EVA GERMAINE RIMINGTON]

The Mathematical Practitioners of Tudor & Stuart England.

1954, Cambridge University Press for the Institute of Navigation. 8vo, in gold-stamped red-cloth covered boards, within a printed heavy paper dust jacket, pp. xii, 443, with 12 plates, a folding map, and a folding facsimile. A foreword, a preface, a narrative in nine chapters of science, scientific instruments, and their makers in England, from 1485 to 1715, short biographies of the instrument makers of that period, arranged chronologically, an annotated bibliography of the important relevant books of the period, a bibliography of secondary works, and an index.

300. TECHNICAL SUPPLY COMPANY [trade catalogue]

Complete Catalog and Price List, Mathematical Instruments and Drawing Materials, Technical Supply Company

Sixth Edition 1913, Scranton, Pa. 12mo, pp. 386 (including 9-page book-list and 6-page index), stapled into stiff-paper covers, illustrated throughout with black and white photographs and figures.

301. TELEDYNE POST [trade catalogue]

1973 Catalog

Chicago, Illinois, 1973. 4to, pp. 226, within color-printed card covers, with color illustrations throughout.

302. TESSERACT [dealer catalogues]

Complete run of catalogues (A-H, and Nine through Seventy-Five) issued by David and Yola Coffeen, trading as Tesseract, Box 151, Hastings-on-Hudson, NY 10706.

303. A. G. THORNTON [trade catalogue]

Illustrated Catalogue of Drawing and Surveying Instruments and Materials; also Photo, Tracing Materials. Wholesale, Retails and for Export A.G. Thornton, Practical Manufacturer, Contractor to Her Majesty's Government, and many of the principal Engineering and Shipbuilding Establishments, Corporations, Science and Art Academies, Schools, &c. St. Mary's Street, Deansgate, Manchester.

1898, Manchester, 8vo, pp. 172, textured black cloth over boards, stamped in gold, yellow end papers. Includes two pages of drawing instruments made of aluminum, and 12 pages of copper stencil plates for letters, complete titles, decorative borders and north arrows, trees and shrubbery for maps, etc.

304. TURNER, ANTHONY J.

Mathematical Instruments in Antiquity and the Middle Ages: An Introduction

1994, Vade-Mecum Press, London. 8vo, pp. 161 (including Preface, Captions to Illustrations, Bibliography, and Index), 28 black and white plates on glossy paper, inserted between pages 96 and 97. Gold-stamped black cloth over boards, with printed laminated paper dust jacket.

305. TURNER, GERARD L'ETRANGE

Antique Scientific Instruments

1980, Blanford Press Ltd., Poole, Dorset. 12mo in gold-stamped turquoise cloth over boards within a color-illustrated laminated-paper dust jacket, pp. 168, with eight black and white illustrations and 69 color plates, bibliography, list of collections, and index.

306. TURNER, GERARD L'ETRANGE

van Marum's Scientific Instruments in Teyler's Museum, Volume IV of Martinus van Marum: Life and Work

Noordhoff International Publishing, Leyden, 1973. 8vo, pp. ix, 401, including about 357 illustrations, bibliography, appendices, and index. Item 345 is a comparative scale rule with scales in inches and lines (1/12 inch) as measured in France, Germany, Amsterdam, England, Holland, and "Palm." Laid in is an illustrated magazine article about Teyler's Museum.

307. TURNER, JANE

An Examination of the Engraved Lettering on English Mathematical Instruments 1550-1800

Dissertation submitted in partial fulfillment of the requirements for the degree of BA in Typography & Graphic Communication, University of Reading, 1982. 4to, pp.145 plus about 36 unpaginated plates and numerous other illustrations with the text. Photocopied typescript and illustrations bound in brown cloth-cover boards, gold-stamped on the spine.

308. WARREN, S. EDWARD

A Manual of Drafting Instruments and Operations. In Four Divisions . . . Designed as a Text-Book, and for Self-Instruction

1866, John Wiley, New York. small 8vo, pp. x, 116, five foldout plates.

309. WHEATLEY, J.Y.

The Polar Planimeter and its Use in Engineering Calculations together with Tables, Diagrams and Factors

1903, published by Keuffel & Esser Co., New York. 8vo, pp. 126 (including Preface, List of Table, List of Plates, Introductory (*sic*), and Explanation of Tables at the beginning, and 12 foldout plates at the end), viii (an abbreviated illustrated Keuffel & Esser catalogue), illustrated with black and white text figures in addition to the text, bound into boards, covered in dark green cloth with blind and gold stamping.

310. G.S. WOOLMAN [trade catalogue]

Priced and Illustrated Catalogue and Descriptive Manual of Mathematical Instruments and Materials for Drawing, Surveying and Civil Engineering. Made, Imported and Sold, Wholesale and Retails, by G.S. Woolman

Forty-first Edition, Part First, 1877, G. S. Woolman, 116 Fulton Street, New York. 8vo, pp. 144, grey paper covers, with many black and white illustrations, with a 28-page catalogue of books and a 16-page illustrated essay on the use of mathematical instruments.

APPENDIX: Biographical Notes

George Adams, Jr. (1750-1795)

Mathematical Instrument Maker to King George III and Optician to the Prince of Wales (the future King George IV), son of George Adams (1709-1772), also instrument maker to George III; author of many books on mathematical and scientific subjects. Adams maintained a lucrative trade in instruments with the Office of Ordnance (roughly equivalent to the modern War Office) during the American Revolutionary War and the Napoleonic Wars. Adams made and sold globes, microscopes, weighing scales, instruments for surveying, gunnery, and navigation, and the sets of drawing instruments that were a necessary adjunct to the use of so many of the other instruments he sold. The Adams family, George Sr., his sons George Jr. and Dudley (1762-1830), plus wives and widows, maintained the trade in instruments and publications from 1734 to 1817 as one of the most important in London.

Agnew & Zanetti (1825-1834)

A partnership of Thomas Agnew and Joseph Zanetti, and was the successor to Zanetti and Agnew (1817-1825), a partnership of Vittore Zanetti, Joseph's father, and the same Thomas Agnew. It occupied successively four locations in Exchange Street, Manchester. The firm made barometers and thermometers, which required divided ivory scales, so making scales for engineers and architects would be a logical market expansion.

Theodore Alteneder

Had been apprenticed to Clemens Riefler (1820-1876) in Germany, came to the United States following the political upheavals of 1848 and founded his own firm in Philadelphia in 1850. He was later joined by his sons and produced a wide range of drawing instruments, judging by his catalogues. From 1871 onwards, his compasses were provided with a patented Alteneder joint.

Aston & Mander

Of 25 Old Compton Street, Soho, London was the successor to the practice and trade of Isaac Aston (II) (w. 1851-1870) and George Mander (w. 1833-1870) at the same address. Isaac Aston (II) was apparently related (son or nephew?) to Isaac Aston (I) (w. 1811-1840) and Mrs. Aston (w. 1841-1842) both of whom worked from the same Compton Street address, and may have been related to Samuel Aston (w. 1785-1820), Thomas Aston (I) (w. 1818-1850) and Thomas

Aston (II) (w. 1841-1862), all from Birmingham, as a 1943 parallel rule on offer in 2006 signed by the firm noted that it was *EST 1785*.

Baraban

There is a listing for Baraban / Thomas, Successeur / 175, Rue Saint-Honoré, Paris in the 1901 catalogue "L'Industrie Française des Instruments de Précision, published by the Syndicat des Constructeurs en Instruments d'Optique & de Précision. The three-page listing for the firm notes, "La maison a été fondée en 1840, par Baraban" and illustrates instruments that are included in this set, as well as cased set that is very similar to this one.

Matthew Berge (w. 1800 d. 1819)

Successor to Jesse Ramsden (w. 1762 d.1800), for whom he had worked, whose innovative and famous dividing engine he inherited, and whose shop at 199 Piccadilly he took over. The Berge/Ramsden relationship is evident by comparing this set of instruments to a very similar (but larger) set of silver instruments by Ramsden at the Science Museum, London, which is illustrated at page 178 in Maya Hambly's *Drawing Instruments 1580-1980* (1988). Matthew Berge may have been related (as son or nephew) to John Berge (circa 1742-1808) who also worked for Jesse Ramsden and who may have completed some of the instruments left unfinished at Ramsden's death (signing them Berge late Ramsden). John Berge was not Ramsden's successor, however, and maintained his own premises in Fleet Street and in Pimlico from 1791 to 1807.

Nicholas Bion (1652-1733)

Maker of scientific instruments who earned the title "Ingénieur du roi pour les instruments de mathématiques." Although many of his instruments survive, including an elegant set of silver drawing instruments in a green rayskin case held by the Science Museum, London, his main reputation derives largely from this work.

William Cary (circa 1759-1825)

The firm founded by Cary was in business in London throughout the 19th-century, at 181 Strand from 1821-1890. The mathematical instrument maker Thomas Jones (1775-1852) was at 4 Rupert Street, Coventry Street, London from 1851, where his firm remained after his death until 1859.

Joseph Louis Casartelli (1822-1900)

Worked in Liverpool 1849-1851 and then in Manchester 1851-1895, succeeding to the business of John and Joshua Ronchetti, brothers of his cousin Harriet Ronchetti, whom he married in 1851. From 1845-1849 he had worked in partnership as Anthony and Joseph Casartelli in Liverpool, succeeding to the business of Lewis Casartelli (1784-1860), who had begun in 1821 in Liverpool.

Charles Wastell Dixey (1798-1880)

Practiced at 3 New Bond Street, London, as George & Charles Dixey 1822-1838 and on his own as C.W. Dixey 1838-1862 and then C.W. Dixey & Sons; held royal appointments to George IV, William IV, Victoria, other members of the royal family, plus King of Belgium. Dixey's second son, Adolphus William Dixey, and his successors continued to trade as C.W. Dixey & Son until the business became a limited company in 1927. Dixey Instruments Ltd., the existing continuation of the original firm, no longer makes drawing instruments.

Peter Dollond (1730-1821)

Was in partnership as Dollond & Son with his father, John Dollond (1706-1761), from 1752 in the Strand at the Sign of the Golden Spectacles and Sea Quadrant. In Following his father's death in 1766, Peter Dollond relocated to premises at 59 St. Paul's Churchyard and entered into partnership with his younger brother, also named John Dollond. The workshop was moved in 1795 to the Haymarket, and following the younger John's death in 1804, Peter Dollond entered into partnership as Peter & George Dollond with his nephew George Huggin (1774-1856), who changed his name to Dollond. The firm continued in business in the family, later becoming Dollond & Aitchison and confining itself to ophthalmic optics. Peter Dollond (along with his father) was most well known for astronomical and surveying instruments, and developed improvements in optics, which were used in both telescopes and microscopes. He was brother-in-law to Jesse Ramsden (1735-1800), and apparently made use of Ramsden's dividing engine. Some of Dollond's production may have been marketed under Ramsden's signature, and vice versa.

B.K. Elliott Company

Founded in 1905 in Pittsburgh, Pennsylvania by Byron Kenneth Elliott (1870-1962). It manufactured and imported drawing and surveying instruments and materials. Its cable address was "Blueprint."

Elliott Brothers

The Elliott brothers were Charles Alfred Elliott (1822-1877) and Frederick Henry Elliott (1819-1873). Their trade was begun by their father William Elliott in 1800 and was at 268 High Holborn from 1835-1849. It continued as William Elliott & Sons at 56 Strand from 1850-1857, and then as Elliott Brothers from 449 Strand after 1857, although they maintained the 56 Strand premises for a time as well. Following Frederick Elliott's death, his widow Susan Elliott replaced him as head of the firm, taking Willoughby Smith as a business partner. On Susan Elliott's death in 1881, Smith and his sons took over the firm. Even though there was no Elliott family ownership at that point, the firm continued to trade as Elliott Brothers for nearly a century thereafter.

William Elliott (apprenticed 1795, worked 1800-1849)

Was at 268 High Holborn from 1835-1849, thus providing the outside dates for the protractor/scale, and also probably for the entire set. He was succeeded by his sons, Charles Alfred Elliott (1822-1877) and Frederick Henry Elliott (1819-1873), trading from 56 Strand as William Elliott & Sons from 1850 to 1853, when their father died.

Elliott (Probably William Elliott & Sons)

The address at 56 Strand indicates that the maker (of at least the protractor/scale) was William Elliott & Sons (who were at that address from 1850 to 1857), which was the successor to William Elliott (apprenticed 1795, worked 1800-1849) and who had been at 268 High Holborn from 1835-1849. The sons of William Elliott were Charles Alfred Elliott (1822-1877) and Frederick Henry Elliott (1819-1873), who traded as Elliott Brothers from 449 Strand after 1857, maintaining the 56 Strand premises for a time as well. Following Frederick Elliott's death, his widow Susan Elliott replaced him as head of the firm, taking Willoughby Smith as a business partner. On Susan Elliott's death in 1881, Smith and his sons took over the firm. Even though there was no Elliott family ownership at that point, the firm continued to trade as Elliott Brothers for nearly a century thereafter. The date and maker of this set is problematic. The empty spaces in the case, the lack of a pair of compasses for the two orphan legs, the varied materials for the decorative wing screws, and the presence of two dividers (unusual for an *étui*) suggest that at least some of the instruments may be replacements. The extra-quality 3-arm parallel rule with its more decorative linkages and the fine arch-jointed sector are consistent with the very fine quality of the case. But that case seems to be quite a bit earlier than the dating of the scale would indicate. A puzzlement indeed.

Piero Fornasetti (1913-1988)

Lived and worked in Milan from 1935. He was an artist, sculptor, decorator, and designer with a recognizably distinctive decorative style that includes illusionism and architectural perspectives. His studio and design production is continuing under the direction of his son Barnaba Fornasetti.

William Fraser (circa 1720-1812)

A mathematical instrument maker to George III and the Prince of Wales at Ferguson's Head, 3 New Bond Street, London. Succeeded at the same premises in 1799/1805 by his son as Fraser & Son.

Lee Guinness

According to HAMBLY *Drawing Instruments 1580-1980*, Lee Guinness was set up in Northern Ireland during World War II specifically to supply quality drawing instruments made in nickel silver.

Thomas Haff

Expanded his clockmaking workshop in the Bavarian village of Pfronten to include the repair of surveying instruments. His three sons, following their training as toolmakers and their mathematical and technical education in Munich, in 1835 founded the firm of Gebrüder Haff for the manufacture of drawing instruments. Although the firm was expanded and utilized mass production methods, the final assembly and finishing of the drawing instruments always remained a hand operation. Haff continues to be a major manufacturer of quality drawing instruments.

John Halden & Co.

Established around 1880 in Manchester and continued in business as major suppliers of drawing office equipment and drawing instruments until 1950. In their heyday in the 1930s, Halden of Manchester had branches in London, Birmingham, Newcastle, Leeds, and Glasgow.

William Harris (w. 1799-1841)

Son of Richard Harris and father of William and Richard Joshua, and apprenticed to Joseph Robinson in 1788, suggesting a possible birth date of circa 1774. He was made free of the Clockmakers' Company in 1796, where he was master 1830-1832. Harris was at 47 High Holborn from 1799 to 1812, and then at 50 High Holborn 1812 to 1848. He took apprentices in 1806, 1815 and 1816, and in 1814 the firm became William A. Harris & Co. In 1811 he patented a quadrant and telescope jointly with David Brewster.

Holtzapffel & Co.

Was at 64 Charing Cross, the address of the signature, from 1839 to 1865. It was the successor to Holtzapffel & Deyerlein (1804-1827), which itself was the successor to John Jacob Holtzapffel, who was at 118 Long Acre in 1796, having established his business in 1794.

C. H. Job & Co. London

Does not appear in available reference works of instrument makers. The company may have been a retailer or the owner of the rule.

Jacob Kern (1790-1867)

Apprenticed first to instrument-maker Ludwig Esser in Aarau, Switzerland, and then studied with the better-known master Fraunhofer in Munich, returning to Aarau to found his own firm in 1819, which continued after its founder's death and expanded to produce precision surveying instruments and binoculars. Ultimately, Kern was acquired by Leica.

Keuffel & Esser

Founded in 1867 as the partnership of William J.D. Keuffel (born 1838) and Hermann Esser (born 1845). Keuffel had apprenticed in the hardware business in the industrial cities of Magdeburg and Hannover. and was newly arrived in New York. Esser had arrived three years earlier. Together they began a retail trade in drawing materials and draftsmen's tools, at first taking their wares directly to architects and engineers much as country peddlers would do. Their first catalogue, issued in 1868, and a retail showroom at 111 Fulton Street in 1873 established the firm on a sound footing. In 1875 the firm opened a manufactory in Hoboken, New Jersey and in 1878 it bought a small building at 127 Fulton Street, replacing it in 1892 with the 8-story building bearing its name that still exists.

Benjamin Martin (1705-1782)

Author, scientific lecturer and instrument maker, was the third son of John Martin of Broadstreet, a substantial farmer in the neighborhood of Worplesdon, Surrey, and his third wife, Jane. Martin began as a self-taught writer, publishing his first book in 1735 from Chichester as a compendium of current knowledge in Natural Philosophy (2nd edition 1738, reprinted six times up to 1778), followed in 1737 by a complementary work on non-mathematical subjects under 25 headings. Books on various scientific subjects followed, including one in 1740 on optics. This became a major field of interest and expertise for Martin, who devised a portable compound microscope with a micrometer. Later known as a drum microscope, instruments of this pattern were produced commercially into Victorian times. Continuing his writing and publishing, Martin expanded into giving lecture/demonstrations and traveling from town to town to do so. In 1756 he abandoned traveling and took a shop in Fleet Street, London, not far from the Royal Society. Having obtained the Freedom of the Goldsmiths' Company, he began to trade as an optician and instrument maker. Needing reading glasses, he devised 'Visual Glasses' for his own use and then for general sale. They proved popular, and were an important part of his trade. In 1757, after acquiring the globe plates and tools of the eminent globe maker John Senex (d.1740), Martin expanded into making and selling globes, but he also produced and sold all types of scientific instruments. To promote his business he issued priced catalogues, advertised frequently, and published descriptive tracts of individual instruments. These were novel activities at the time, but they eventually became the norm. Probably as a result of this widespread publicity, he obtained substantial orders from Harvard College, in Cambridge Massachusetts, to replace the scientific instruments that had been lost in a fire in 1764. As age advanced on him, Martin curtailed his lecturing (but not his writing) and from 1778 traded as "Benjamin Martin & Son." The "Son" was Joshua Lover Martin, who had been formally apprenticed to his father in 1758, but who evidently lacked his father's business acumen. In 1782, Martin was declared bankrupt, and his extensive stock-in-trade was sold at auction.

Alexander Mathieson & Son

According to CLIFTON, *Directory of British Instrument Makers 1550-1851*, the Mathieson firm had shops in both Edinburgh and Glasgow and was assessed dates of 1850-1900 (apparently on the basis of a single instrument (a spirit level)).

Edward Nairne (1726-1806)

Apprenticed to Matthew Loft, and set up in 1752 at the sign of the Golden Spectacles in Cornhill opposite the Royal Exchange. He produced a wide variety of instruments, published, and became a member of the Royal Society. In 1773 he entered into partnership with Thomas Blunt, trading as Nairne & Blunt until 1793. That year, the partnership dissolved and the two men resumed trading as individuals. The simple signature E Nairne London suggests that this set of instruments was made during his first period of working without a partner, between 1752 and 1773, as after 1793 his instruments were generally signed Nairne, Cornhill, London, or some variant thereof. See, "Edward Nairne, Scientist and Instrument Maker," by Deborah Jean Warner, in *RITTENHOUSE*, Vol. 12, No. 3, July 1998.

Negretti & Zambra

Began about 1843 as the solo trade in scientific instruments of Enrico Angelo Ludovico Negretti (1818-1879), who was born in Como, Italy, came to England in 1830, and was apprenticed as a glass blower and thermometer maker. In 1850, Henry Negretti (as he then called himself) took as a partner Joseph Warren Zambra (1822-1897), who was born at Saffron Walden, England. The firm was established in Hatton Garden, London, with branches in Cornhill. Negrettis and Zambra maintained the business as a private family firm until 1946. It became a public company in 1948 and continues in business although it ceased making drawing instruments in 1975. From the beginning it sold optical, mathematical, and meteorological instruments, with a particular specialty in domestic barometers. The firm's catalogues carried so many items that it seems logical that they may have been merely retailers for many of those items. The design and details of this set of instruments suggests that it may have been made for Negretti & Zambra by Stanley, Halden, or Thornton, but this cannot be determined, as the firm's records to that time were destroyed in World War II.

Pigeon à Lyon

The Pigeon family of Lyon was among the very few instrument makers working outside of Paris. The earliest in Lyon was Jean Pigeon (1654-1739), who constructed a clock-driven orrery for Louis XIV in 1706. By 1714, Jean Pigeon was working in Lyon with his son-in-law, G. LeRoy. In 1750, Jean Pigeon's daughter, Marie Anne Victoire Premontual, published a biography of her father.

E.O. Richter & Co.

According to HAMBLY *Drawing Instruments 1580-1980* and the introduction to one of the firm's catalogues, E.O. Richter (circa 1841-1907) trained as a clockmaker and then founded his own firm in Chemnitz, Saxony in 1875 for the manufacture of drawing instruments. In 1892 he patented his 'flat system' pattern compasses, which had considerable effect on those produced by other firms after the patent expired in 1905. Richter also designed specialist instruments for drawing, including a universal dotting device and new improved ruling pens. The Richter firm established a regular export trade for drawing instruments to the United States, and ceased trading in 1945. VEB Kombinat continued as successor in Karl-Marx-Stadt (formerly Chemnitz) in East Germany.

Clemens Riefler (1820-1876)

In 1841 following his apprenticeship with Ertel in Munich, Clemens Riefler (1820-1876) began to make drawing instruments in the Bavarian town of Nesselwang. His firm expanded, and eventually combined the manufacture of drawing instruments with other precision instruments. By 1877, his son Sigmund Riefler (1847-1912) had patented a design for a "round system" of drawing instruments that used rods and hollow tubes. The instruments, which were light-weight and could be assembled without screws, continued in use into this century.

John Rowley (circa 1668-1728).

Born in Lichfield, Staffordshire, England, son of William Rowley, a sword-cutler; apprenticed to Joseph Howe 1682; free of the Broderers' Company 1690; 1691 Behind the Exchange, Threadneedle Street, London; 1702-1715 The Globe under St.Dunstan's Church in Fleet Street, London; 1715-1727 Master of Mechanics to George I. When Rowley gained the royal appointment in 1715, his shop was taken over by Thomas Wright, one of his apprentices, who continued to attend to the retail trade while Rowley concentrated on royal, governmental, and regular large "corporate" customers.

Sautout-Choizy

Apparently a small maker who produced relatively few instruments, or at least few that have survived. A folding rule is at the Metropolitan Museum of Art, New York; a graphometer at the Museum für Kunst und Gewerbe, Hamburg; a sector at the Scheepvaart Museum, Amsterdam, and at the historic scientific instrument collection at Harvard University, Cambridge, Massachusetts. He is dated variously from circa 1740 to circa 1760.

Stanley London

Represents the firm of William Ford Stanley, who founded his instrument-making firm in 1853 and published in 1866 *Mathematical Drawing Instruments*, the most comprehensive description and practical guide published to that date. W.F. Stanley manufactured and sold a very broad range of instruments, continually improving existing forms and creating new ones. Without consulting successive catalogues of the firm, it would not be possible to date the Stanley rule in this assemblage.

William Ford Stanley

Founded his instrument-making firm in 1853 and published in 1866 *Mathematical Drawing Instruments*, the most comprehensive description and practical guide published to that date. W.F. Stanley manufactured and sold a very broad range of instruments, continually improving existing forms and creating new ones. One of Stanley's apprentices – W.H. Harling – set up his own firm, and Harling's apprentice, A.G. Thornton, in turn set up his own firm. By about 1960, W.F. Stanley & Co. Ltd. had stopped making drawing instruments.

Jacques Nicholas Surcou (b. 1758)

Listed at Rue de la Mortellerie No. 72, in the first 1794 list of 19 members of the Association of Instrument-makers of the Cloître Notre Dame, although he was omitted from the final list of 17 members. He was shown on the first list as being 36 years old at the time. The maker of the protractor (apparently added by an early owner), was a man named Nebel working in Paris, who added au Butterfield to his signature (as did others at that time) to indicate some one-time association with the great instrument maker Michael Butterfield (1635-1724), an Englishman working in Paris from around 1677. M. Nebel is shown in some references as having worked in the second quarter of the 18th-century, and in other references as working near the end of the 18th-century. The absence of Nebel's name in the 1794 list of Paris instrument makers suggests that he was no longer working then. Further research is needed to identify him with greater certainty.

A.G. Thornton

Founded his firm in 1880 at St Mary's Street, Manchester. He had been an apprentice to W.H. Harling, who in turn had apprenticed to William F. Stanley. The firm continues as British Thornton.

John & Edward Troughton

The Troughton family were Cumbrian farmers. John Troughton, uncle of John and Edward, had established an instrument-making business in London in 1756. Nephew John was apprenticed to his uncle in 1757 and his brother Francis was apprenticed in 1763. Edward had planned on remaining in Cumberland to run the family farm, but when Francis died in 1773, Edward too traveled to London and was apprenticed to his brother John. John's business expanded, and in 1788 Edward became his partner, trading from 136 Fleet Street. John retired in 1804 and died in 1807. Edward expanded the business, and produced sextants for the Admiralty to his own patent. From 1825 to 1831, Edward Troughton was in partnership with William Simms as Troughton & Simms. Troughton died in 1835.

Watkins (Jeremiah (d.1810) and Walter (d.1798); w.1784-1798)

Jeremiah (d.1810) and Walter (d.1798) Watkins (w.1784-1798), successors to Francis Watkins (w.1747-1784), 5 Charing Cross, London. Royal appointments to the Duke and Duchess of York and the Duke of Clarence. Supplier to the East India Company. Advertised a full range of optical and philosophical instruments; known to have sold drawing instruments, microscope, octant, telescope, waywiser.

Watson & Son

The successor to William Watson (w.1837-1865) was at 313 High Holborn, London from 1869-1872. The firm celebrated its centenary in 1937.

Whiford

No maker with the spelling Whiford is recorded. However, a Samuel Whitford (d.1789) was an instrument maker who advertised "Cases of Drawing-instruments," who worked from about 1755 as apprentice to John Lind and, starting in 1776, from a shop under the sign of Archimedes & Three Spectacles at 27 Ludgate Street, near St. Paul's. Whitford's name probably would have been pronounced as if it were Whiford.